Challenges of Information Systems Innovation in Developing Country Contexts: An Inquiry into the Adoption of Institutional Repositories in Nigerian Universities

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Declaration

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Acknowledgements

This PhD journey started in 2011 when I deferred my admission to the University of Cape Town [UCT] Information Systems Graduate Studies Program, until 2012. In March 2012 upon my arrival at UCT, from Nigeria, Prof. Ojelanki Ngwenyama's Philosophy of Science course had already started in the previous month of February, 2012. I had lost two months of classes, necessary classes, in preparation for my PhD studies. I, therefore, waited until February 2013 to participate in said course.

In February 2013, I was working with Associate Professor Kosheek Sewchurran of UCT's Information Systems Department. Later that term, Prof. Sewchurran moved from the IS department to UCT's Business School. This meant a new supervisor had to be found. Eventually, God gave me a new supervisor, Prof. Ojelanki Ngwenyama, without much struggle. In the social context of my socialization we call the Natural Power that arranges events 'mysteriously', God. In December 2013, my study visa expired; my wife had surgery; and, we lost a baby in the process.

In March 2014, I was denied the renewal of my student visa. In April, 2014, I was denied a visa to Britain [UK] to participate in a PhD forum organized by the Digital Library Conference. In September, 2014, I lost my job in Nigeria. For eighteen months I was unemployed. By March, 2016, I found new employment and, was able to augment the funds received from UCT during the latter part of my studies there. In February, 2017, my brother, who lives with my family, had surgery. The next month, March 2017, my father who also lived with my family, fell ill and died, aged 85 years, on April 27, 2017. July 7, 2017 he was buried in the village as required by tradition. By September, 2017, I resigned my employment to complete my PhD studies.

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Dedication

The real man smiles in trouble, gathers strength from distress, and grows brave by reflection- Thomas Paine

I dedicate this thesis to these men. They are mirrors through which I see myself and life.

To:

God, the Man and the Father

My father, Charles Okolocha Utulu (August 1, 1932 – Aprial 27, 2017)

My brother, Paul Azuka Utulu (March 25, 1969 – February 13, 2004)

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Rev. Fr. Linus Awuhe OP (Apostle of Word and Fire)

Rev. Fr. Anthony Alaba Akinwale OP (Apostle of Understanding & Wisdom)

Professor Ojelanki Ngwenyama (Apostle of Word and Peace)

My sons

Annointed, and

Jesse

These men made significant changes in my life as a man. They made me a better man, a better version of myself.

Peer-reviewed Research Outputs

1. Utulu, S. & Ngwenyama, O. (2017). Model for Constructing Institutional Framework for Scientific Knowledge Management Systems: Nigerian Institutional Repository Innovation Case Applicable to Developing Countries. In Kaur Harleen, Ewa Lechman & Adam Marszk (eds.) *Catalyzing Development through ICT Adoption* pp. 149-174, Springer.
2. Utulu, S., & O. Ngwenyama (2017). "Rethinking Theoretical Assumptions of the Discourses of the Institutional Repository Innovation Discipline". African Conference on Information Systems & Technology (ACIST), Cape Town, South Africa, July 10-11, 2017.
3. Utulu, S. (2014). Mobile Phone and Development: Synthesis on New Misuse Perspective. In ICTs and the Millennium Development Goals, H. Kaur and S. Tso (Eds.), pp.: 101-125, New York: Springer.
4. Utulu, S. & Sewchurran, K. (2014). Designing E-government Platform from the Perspectives of Systems Thinking and Performance Measurement Frameworks: How Good Thinking and Good Questions Aid Information Systems Design. In: Technology Development and Platforms Enhancement for Successful Global E-Government Design, Bwalya, J. (Ed.), pp.: 97-117, Hershey: IGI.
5. Solanke, O. Utulu, S. & Adebayo, E. (2014). Towards a User Based Perspective to the Transformation of Museums. Proceedings of the International Conference on Social Sciences and Humanities, Istanbul, Turkey, September 8-10.
6. Utulu, S. & Sewchurran, K. (2013) Systematic and Grounded Theory Literature Reviews of Software Development Improvement Phenomena: Implications for IS Research and Practice. Paper delivered at the Incite Conference at the Universidade Fernando Pessoa, Porto, Portugal, June 30 - July 6, 2013.
7. Utulu S. (2013). An Empirical Interrogation of Institutional Norms and Patterns in Undergraduate Research. Proceedings of 1st Annual International Interdisciplinary Conference, Azores, Portugal, April 24 - 26.
8. Adriaanse, Z., Utulu S. & Sewchurran, K. (2012) An Appraisal of Social Network Media Use for Online Group-Buying in South Africa. Proceedings of the World Academy of Science, Engineering and Technology International Conference on Internet Information Systems and Technology, Issue 68, 22-23 August, Paris, France pp.: 1698-1710.

Abstract

Empirical observation persistently shows that information systems (IS) innovation is always hampered by different challenges. The number of failures and incomplete IS innovation reported across the globe, particularly in developing countries justifies this. Using the example of institutional repository (IR), an IS used to promote open access to scientific knowledge produced by universities, this study proposes actionable remedies to challenges of IS innovation in universities in developing countries. This study focuses on IR because little of it exists in universities in developing countries despite the fact that it is a cost effective way for universities to distribute scientific knowledge. IR has also not been a major focus of IS researchers despite its importance in the contemporary global academic landscape. The study therefore aims to develop explanation and solutions to barriers to IR innovation in universities in developing countries. The qualitative interpretive research philosophy was adopted together with the case study research method to conduct three empirical studies. Inductive research approach and unstructured qualitative data collection techniques were also adopted. Study 1 was carried out to assess IR innovation barrier factors at the institutional level. It reveals how globalization trends, transformation of universities and conditions of university libraries constitute IR innovation factors at institutional level. Study 2 was carried out to assess IR innovation barrier factors at the organizational level. It shows how institutional logics, adherence by universities to traditional university management orientations and paradox barrier factors constitute IR innovation factors at the organizational level. Study 3 identifies factors that influence effective tacit knowledge management at the individual level. The factors are namely, privileged information and experiences, mental reflection, planned interactions and dialogues and sustained real-time enactment of IR innovation. The three studies provide a set of theoretical and practical insights that contribute to the IS discipline, IS in developing countries and IR innovation. The contributions show how institutional, organizational and individual level factors influence IR innovation. The study reaches its goal of providing understanding and resolution to IS innovation barriers in universities in developing countries and in contexts that have similar socio-technical characteristics.

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Acronyms

ABU	Ahmadu Bello University
BOAI	Budapest Open Access Initiative
CHREN	Commission for the Review of Higher Education in Nigeria
EU	European Union
FGN	Federal Government of Nigeria
HOD	Head of Department
ICT	Information and Communication Technology
IR	Institutional Repository
IS	Information Systems
ISDC	Information Systems in Developing Countries
IT	Information Technology
LIS	Library and Information Science
NUC	National Universities Commission
OAI	Open Access Initiative
OAJ	Open Access Journal
OAU	Obafemic Awolowo University
TET Fund	Tertiary Education Trust Fund
UCI	University College, Ibadan
UI	University of Ibadan
UNILAG	Universit of Lagos
UNN	University of Nigeria

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Chapter 1: General Introduction

1.1 Introduction and Motivation

The Institutional repository (IR) is a digital technology designed to facilitate the self-management of scientific knowledge by universities and other research institutions (Shearer, 2013; Harnad, 2001). IR platforms provide digital media tools to enable universities to directly manage their patents, scholarly research output and other intellectual property (Harnad, 2001). While the IR approach shares common characteristics with the open access journal (OAJ) concept, it differs from OAJ in that authors pay no fees for services. The goal of IR is to make a university's intellectual output available to the public without fees or access charges (Lynch, 2003; Crow, 2002). Promoters of IR argue that it would boost the global visibility of universities and authors, and enable equitable and free access to scientific knowledge (Holley, 2013; Foster & Gibbons, 2005). Harnad (2001) argues that wide adoption of IR could transform the prevailing commercial model of access to scholarly knowledge. He predicted that cost-effective IR tools could bring an end to the domination of commercial publishers. Library and Information Science (LIS) researchers endorse this view and also argue that IR could enhance learning and research opportunities and global visibility for less resourced universities in the developing regions of the world (Lynch, 2003; Anunobi & Okoye, 2008).

These potential benefits have motivated a variety of studies on IR implementation, awareness and acceptance among academics (Westell, 2006; Shearer, 2003). Recently, some research has started on investigating the potential of IR to promote the dissemination of research in developing countries (Ezema, 2013; Chan & Costa, 2005). Some research has focused on how IR can facilitate research and stimulate the social and economic development goals of developing countries (Nwagwu, 2013; Wyk & Mostert, 2011). In spite of the perceived benefits of IR, the number of universities in developing countries adopting this technology remains low. Some studies suggest that new institutional policies are needed to facilitate IR adoption in developing countries (Shearer, 2013). Other studies point to awareness, acceptance, copyright issues and adherence to traditional publishing culture as major barrier factors (Okoroma & Abioye,

2017; Pinfield, *et al.*, 2014). Studies on the barriers to IR innovation in developing countries are scarce and the results are contradictory (Utulu & Akadri, 2014; Ghosh & Das, 2007; Chan & Costa, 2005). This PhD research project aims to fill this knowledge gap by developing an understanding of barriers to IR innovaton in universities in developing countries. The general research question is: What conditions contribute to slow IR innovation in Nigerian universities? In the context of this study, 'slow' IR innovation is taken to mean IR innovation that exceeds the time stipulated for its completion. The research project adopts a multi-study approach using a qualitative methodology comprising interpretive case study, inductive reasoning and participatory methods. I developed a set of specific subquestions that enabled me to answer the general question. These are:

> *Study 1:* What are the barriers of IR innovation in Nigerian universities and how did the barriers evolve?
>
> Study 2: How do activities of individuals and organizations outside the university context constitute barriers to IR innovation in Nigerian universities?
>
> Study 3: How should the tacit knowledge of relevant stakeholders be managed to positively impact IR Innovation in Nigerian universities?

Three empirical studies are conducted targeting different levels of the empirical context of IR adoption: global/institutional, organizational and project level. The three studies were conducted using the case study research method and the inductive reseach approach. The rest of the chapter is organized as follows: Section 1.2 presents a literature review of the discipline of IR innovation; 1.3 presents the reseach program; 1.4 outlines the research philosophy and approach used in the study; 1.5 presents the research method; 1.6 presents the historical overview of the Nigerian university system and lastly, 1.7 presents the thesis map.

1.2 Institutional Repositories: Promises and Challenges

The emergence of Institutional Repositories (IR) can be traced to the late 1990's when researchers begun to promote the idea that universities should adopt new digital media technologies to facilitate open access to scientific knowledge (Harnad, 2001; Crow, 2002; Ferreira, et. al., 2008). The Budapest Open Access Initiative (BOAI) of

February, 2002, and the Berlin Declaration on open access to knowledge in the sciences and humanities of October 22, 2003 are major historical moments in the development of a new paradigm of scientific knowledge management, the Open Archives/Access Initiative (OAI) upon which the Institutional Repoistory concept is based (Yiotis, 2005). In this regard, the OAJ initiative of the 1980s, can be viewed as the forerunner of IR and OAI.The OAI must also be seen as part of the larger Free Open Source Software movement, whose basic motivation was the removal of economic barriers to digital technologies in order to stimulate research and development in rich and poor regions of the world (Effah & Abbeyquaye, 2013). However, while focused on digital tools for self-management of the intellectual property of universities and public research institution, the scope of IR is much broader. s (Crow, 2002; Wyk & Mostert, 2011). The innovators of OAI and promoters of IR explicitly stated their goals as follows:

"An old tradition and a new technology have converged to make possible an unprecedented public good. The old tradition is the willingness of scientists and scholars to publish the fruits of their research in scholarly journals without payment, for the sake of inquiry and knowledge. The new technology is the internet. The public good they make possible is the world-wide electronic distribution of the peer-reviewed journal literature and completely free and unrestricted access to it by all scientists, scholars, teachers, students, and other curious minds. Removing access barriers to this literature will accelerate research, enrich education, share the learning of the rich with the poor and the poor with the rich, make this literature as useful as it can be, and lay the foundation for uniting humanity in a common intellectual conversation and quest for knowledge." (Chan, et. al., 2002).

The OAI is viewed as highly beneficial to universities in developing countries. The central argument is that IR will reduce the high cost of access to scientific knowledge while freeing up resources for research and learning initiatives (Wyk & Mostert, 2011; Harnad & Broody, 2004). Furthermore, IR as the primary vehicle of the OAI will allow universities to share knowledge, offering members of the global university community free and equitable access to scientific knowledge wherever it may be located (Holley, 2013; Foster & Gibbons, 2005). Over the years, IR researchers have, therefore, tried to standardize protocols and practices to facilitate this beneficial sharing of knowledge (Crow, 2002). Some studies have provided insights into IR infrastructure design requirements necessary for implementation in universities (Westell, 2006; Lynch, 2003). Others have suggested policy, and institutional and facilitation frameworks for IR

adoption and implementation (Foster & Gibbons, 2005).

Some researchers argue that the lack of organization-wide implementation management capabilities is hampering IR adoption (Utulu & Akadri, 2014; Cragin, et. al., 2010). An early study by Damian (2007) made clear that diverse stakeholders' interests are a fundamental challenge to IR implementation. Managing the competing interests of different university stakeholders in an IR adoption is often beyond the capabilities of IR implementation managers who tend to be technically oriented (Holley, 2013; Covey, 2011; Cragin, e. al., 2010). The internal IR stakeholders including the academics, university management and specialists (computer programmers, network experts, analysts, librarians, etc.) have different interests in the IR adoption. The external stakeholders including the conference and workshop organizers, publishers, information brokers also have still different interests (Westell, 2006; Shearer, 2003). Cragin, et. el. (2010) report that IR implementation deeply challenges the existing culture of stakeholders. Tension surrounding tenure systems and academic reward also impact IR adoption and implementation (Kim, 2011; Davis & Connolly, 2007; Seonghee & Boryung, 2008; Kim 2007; Björk, 2004). Some research has argued that university publication policies, tenure systems are themselves barriers to IR adoption as 'peer reviewed journal' publications appearing in print are more valued than OAJ or OAI publications (Kim 2011; Cullen & Chawner 2011; Salo, 2008; Kim, 2007). IR technologies and OAI provide a model of scholarly knowledge sharing that is quite different from traditional models in universities (Kim, 2007; Foster & Gibbons, 2005; Ware, 2004). Unfortunately, research on IR phenomena did not consider the impact of traditional academic culture on sustainable IR deployment. Professional commitments and differences in cultures among members of the university community can create tensions that impact IR deployment. For instance, while a university librarian's goal for IR adoption may be improved information service, a university administrator's goal may be improved visibility of scholars and the institution in order to obtain grants (Utulu & Akadri, 2014). For an academic, the goal may be to gain access to quality research and to achieve personal visibility (Pinfield, 2015).

Recently, researchers have begun to recognize organizational contextual differences as important influences on IR adoption (Palmer *et al.* 2008; Walters, 2007).

The IR literature still lack studies that focus on organizational context issues that impact IR adoption and innovation. Most studies of IR adoption research views universities, colleges, faculties and departments as having similar IR requirements (Palmer, *et al.*, 2008). A few studies have tried to understand the differences in disciplinary and institutional contexts on the level of awareness, acceptance and use of IR (Jantz & Wilson, 2008; Lercher, 2008; Rieh, Markey, St. Jean, Yakel & Kim, 2007; Xia & Sun, 2007; Markey, *et al.*, 2007). The literature has established that every attempt at IS innovation has to deal with different contexts characterized by individuals, groups, organizations, industries, and societies (see for instance Sahay & Mukherjee, 2015; Raymond, 1990). In the context of this study, IR contexts indicate physical locations (which also include electronic contexts) where different categories of IR stakeholders operate (Markey, Reih, St. Jean, Kim &Yake, 2007; Zhao, 2004). As a result, apart from contextual differences inherent in different universities such as those identified by Palmer *et al.*, (2008), there are also intra-university contextual differences which may best be described as ontological differences (Nonaka & Takeuchi, 1995). Ontological difference is used in this thesis to describe different contexts of operations within universities. For instance, academic contexts are defined by academic fields (Schools, Institutes, Colleges, Faculties and Departments). Administrative contexts are defined by divisions, departments, units, power and responsibilities. In reality, every group involved in IR innovation has diverse status and statutory responsibilities which are determined by the ontological spaces where s/he operates (Khoo & Hall, 2013; Nonaka& Senno, 1996; Nonaka, 1994).

1.3 Research Program

This PhD study is situated in the IS implementation research stream with specific emphasis on the information systems in developing countries (ISDC) research stream, and focuses on the IR innovation in developing country contexts. According to Avgerou (2010), innovation represents planned actions implemented by collectives to construct both technological and social realities that facilitate successful implementation and sustainable utilization of IS. The research focuses on developing a better understanding of the socio-technical factors that influence IR innovation in developing country contexts. The goals are to identify barriers and enabling factors and to develop a framework that

could enable IR practitioners and researchers to better manage IR innovation projects in order to improve outcomes in developing country contexts. An important objective is to generate actionable knowledge that provides practical insights on how to solve IR innovation barriers that were identified during the course of the study.

The PhD study is driven by the general research question: What conditions contribute to slow IR innovation in Nigerian universities? In this study, slow IR innovation indicates stalled innovation or innovation that drags far more than the time allotted for its completion. The research project investigates the questions using a multi-method approach and three studies that inquire into three distinct levels of the empirical situation. The objective of Study 1 is to develop an understanding of how institutional structures in developing countries influence the IR innovation in universities. Study 2 focuses on understanding how organizational policies and conditions at the university level influence IR innovation. And Study 3 focuses on the individual level to develop an understanding of knowledge and expertise factors influencing successful IR innovation and adoption by university libraries. In the context of this study, institutional level factors include factors (events) occurring external to the universities that are triggered by the connectivity of global activities. Organizational level factors are factors (events) occurring within universities that are triggered by the connectivity of global activities. Individual level factors are factors (events) occurring among individuals that are triggered by the connectivity of global and organizational activities. The figure below illustrates the foci and interlocking logic of the empirical studies of the PhD research project (see Figure 1.1). In the following sections of this chapter, I give a brief outline of the research philosophy and methods used. Details of the application of the specific research methods are documented in each study reported in separate chapters (2-4).

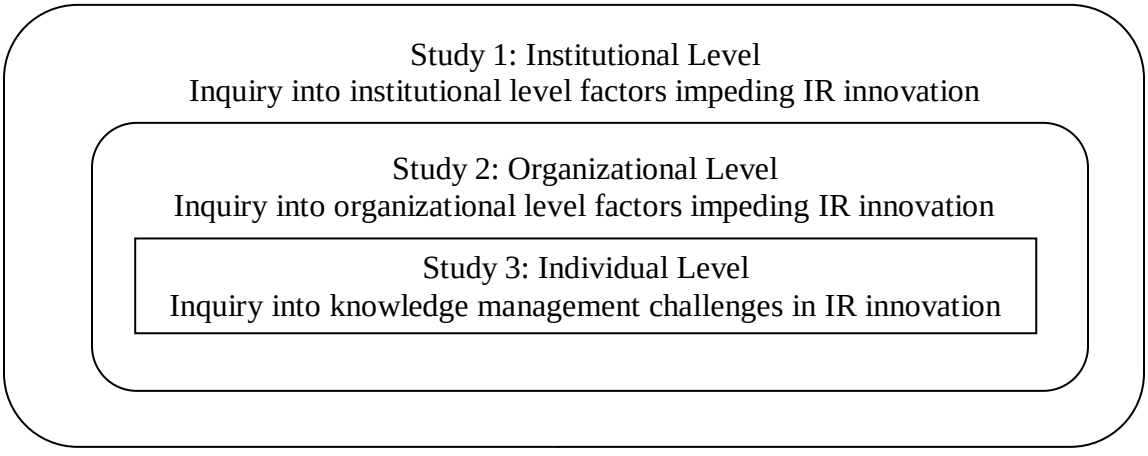


Figure 1.1: Empirical Situations of this Multi-Study PhD Research Project

1.4 Research Philosophy and Research Approach

The philosophical orientation of this PhD study falls within the interpretivist paradigm of information systems research. Walsham (1995), Myers (1997), Klein & Myers (1999) argue that interpretive IS research is concerned with understanding socially constructed meanings from the point of view of the actors who create them. In their seminal work, Schutz and Luckmann (1989) explained that social reality is jointly constructed by a stream of social actors, predecessors, consociates, contemporaries and successors. Predecessors are social actors of the past, followed by successors who will exist in the future; consociates share everyday realities in real-time, while contemporaries are social actors that do not share everyday realities in real-time (Schutz, 1967; Schutz & Luckmann, 1989; Berger & Luckmann, 1966). IR innovation and many IS research situations, especially IS implementation projects, fit this description. Consequently, Walsham (1995) notes the importance of social issues to IS research and the need to adopt empirical approaches that focus particularly on human interpretations and meanings. Checkland & Holwell (1998) also note that "With 'meaning' at the core of the IS field, work in that field has to be done outside any belief that there is the possibility of a static social world 'out there'… (p. 238)." The interpretive philosophy is appropriate for inquiring into IS phenomena where the researchers are interested in the social actors' interpretations of their everyday social roles accordingly and the meanings they ascribed to such roles within the organizational contexts of their work activity. This PhD study is concerned with the social roles of actors involved with IR innovation within the university context that hold specific meanings for them. Consequently, the adoption of the interpretive philosophy allowed me to focus specific attention to the wider social and historical context and interrogate the lived experience of the actors involved with IR innovations (Blackler, 1993).

IR innovation, like other forms of IS, consists of a variety of functions which may range, among others, from managerial, technical, software configuration, administration, carrying out research and the processes of dissemination of research through reposition in IR (Avgerou, 2008; Foster & Gibbons, 2005). By its nature it engages different stakeholders who perform different roles in universities, for instance, academics, librarians, administrators, legal experts, IT workers and students. It also engages

stakeholders that operate outside university communities. As a result, no single theory is capable of capturing the array of phenomena that exist in IR innovation. Adopting a multi-level approach enables the surfacing of both micro and macro factors of IR innovation. Moreover, involving different classes of IR stakeholders (individual, group, intergroup, organizational and societal) enables the surfacing of different perspectives of the IR innovation problem. This approach of multilevel assessment is a novel approach in the discipline given that no previous IR study has implemented it. This calls for the use of inductive research approach. According to Gioia, *et al.*, (2013) and Thomas (2006), the distinction between inductive and deductive research approaches can be seen at the time existing theories were adopted in a research study and if the researcher soughts to uncover valid assumptions or test hypotheses raised around some theoretically derived questions. In studies that adopted inductive research approach, theories are used to interpret the research data after data collection is completed. On the other hand, deductive reasoning based studies are informed by existing theories and are focused on testing statements of facts derived from theories. In other words, they test existing theories.

1.5 Research Methodology

Language is a gift, but listening is a responsibility- Nikki Giovanni

The research adopted the case study research methodology. Collins and Hussey (2003) put forward that the inductive approach allows in-depth data collection to serve as the basis for developing new theories and insights towards identified research questions. Using a case study methodology, the PhD research project was conducted in three universities located in Nigeria. All three can be categorized as small universities because they have a student population of about 4,000 and academic staff strength of about 200 each. Two of the universities are privately owned, and the other is a public federal university. One of the universities has implemented its IR and has been listed in the directory of open access repositories (Directory of Open Access Repository-OpenDOAR and Registry of Open Access Repository-ROAR). The other two universities are currently in the process of implementing their IR projects, but are at different stages of IR innovation. The three research situations provided avenues to surface contextual issues that determine IR innovation at different stages (planning, implementation and

sustenance) of IR innovation.

The case study research method is an acceptable method for conducting research in the IS discipline (Klein & Myers, 1999; Walsham, 1995). Although, some scholars have argued against its validity as an appropriate research method, arguments have continued to be raised in its favour (Klein & Myers, 1999; Walsham, 1995). One of the claims made about the case study research method is its power to falsify an existing theory (Lee, 1989). This, therefore, means that case study research method is a valid method for building new theories and expanding existing ones (Berg, 2007). The inductive research approach, as indicated by Collins and Hussey (2003) enabled the development of novel theoretical insights towards understanding IR innovation in universities in developing countries. These insights are in regards to how globalization trends, transformation of universities and adherence to traditional university management orientations influence IR innovation in universities in developing country contexts. Consequently, instead of testing existing theories, the inductive research approach enabled me to draw conclusions based on the study findings by relating study data with existing theories (Gioia, Corley & Hamilton, 2013).

By using the case study research approach, I was able to falsify the claims that IR innovation factors are limited to those inherent within universities. I show how factors across the globe, in combination with those within national boundaries and the case universities, determine IR innovation.

1.5.1 Method of Data Collection

Data was collected by using the following methods: interviews, participant observation and secondary data analysis. Ethnographic observation of research situations and participants was conducted over approximately 13 months. Secondary data collected for the study included staff handbooks, a dissertation and official websites of key organizations**.** A total of 112 interviews were conducted with different categories of research participants, i.e, administrators (Deans, Head Of Departments, Directors of Academic Planning), academics, IT experts, librarians, paraprofessional workers in the library and students. The snowball sampling technique was used to allow for the expansion of the sample of interviewees based on research requirements and research subject's relevance to research objectives. In other words, while the study data collection

began with, for instance, members of staff of the university library in the first case study university, through snowball sampling technique, other relevant members of university staff were sampled based on their relevance to the research objectives. Table 1.1 below shows the categories of participants that were interviewed and the number of interviews that were held in each category that were reported in the three studies that comprise this thesis.

Table 1.1: Number of Interviews held during the Study

Categories of Participants	**Sub-Categories Participants**	**No. of Interviews**
Administrators	Deans	6
	Director of Academic Planning	3
	Heads of Department	12
Staff	Academics	30
	IT Experts	8
	Librarians	25
	Para-professional Librarians	10
Students	Students	20
Total Number of Interviews		**114**

1.5.2 Sampling Technique

The three case universities were selected using convenience sampling technique. Convenience sampling technique has the added advantage of allowing researchers to select samples that are directly relevant to their study and that can be conveniently accessed (Etikan, *et al.*, 2016; Marshall, 1996). The snowball sampling technique was used to allow for the selection of interviewees based on their relevance to the research objectives (Noy, 2008; Atkinson & Flint, 2001; Biemacki & Waldorf, 1981). For instance, while the study data collection in University I began with the head librarian in University I, the librarian put in charge of IR innovation was sampled through snowball sampling technique. This is because the statements and claims made by the head librarian consistently pointed to the key role of the librarian put in charge of IR innovation. This continued until other relevant members of staff of the university were sampled based on their relevance to the research objectives as elicited during interview with other research subjects. The circumstances in each of the case universities determined the research subject that was chosen as the first interviewee. In University II, the first interviewee is an academic staff. In University III, the first interviewee is an IT staff. In all cases, the first interviewee determined the next interviewee based on the

information s/he provided during the interview. The decision to interview the next research subject was generally based on their assumed importance to the research objectives.

1.5.3 Secondary Data

In qualitative studies that seek to achieve data validity, the triangulation of multiple data collection instruments is said to be helpful (Chen & Hirschheim, 2004; Myers, 1997; Benbasat, *et al.,* 1987). Secondary data such as official letters, internal memos, field notes, policies, handbooks and directories were collected. Memos that were written to communicate the case universities' IR innovation ambitions were shared by administrative staff and librarians that have official access to them. The secondary data sources enable the documentation of events relevant to surfacing historic factors influencing IR innovation in the case universities. I combined archives, sources-memos, staff handbooks and official websites of the case universities with in-depth interview and participatory observation. A rich collection of research data was obtained by comparing claims made during in-depth interviews with revelations from participatory observations and information contained in archive sources. Archives provided avenues for eliciting historic information and also served additional function for confirming claims made by research subjects (Benbasat, *et al.,* 1987).

1.5.4 Ethical Considerations

Sample population comprised members of staff of the case universities. Ethical considerations regarding free participation, use of personal data and the presentation of sensitive information provided by research subjects in the public domain were taken into account. There was a slim possibility to request for 'sensitive' information in the study. Nevertheless, issues regarding sensitive information provided by research subjects were thoroughly discussed with each participant. This enabled them to understand the extent to which data required for the study may require the provision of information about their universities that they consider private or sensitive. Secrecy, data ownership and consideration of data that can be presented to the public as research output were defined and agreements were reached between the case universities and myself. The agreements also extended to research subjects. To further validate my ethical aims/claims, a Nigeria-

based professor of Information Science assessed my methodology and ethical claims and certified that my methodology does not pose any ethical problems given the kind of research study that I planned to carry out.

1.5.5 Participant Observation

Participant observation occurs when researchers immerse themselves in the everyday life experiences of research subjects. It is believed that cultural issues are best studied this way because of the contextual meanings and interpretations that are attached to them (Berker & Geer, 1957). According to Spradley (2016), participatory observation has to do with participating in local activities, that is, real life activities of those under study, asking questions, watching events as they unfold, taking field notes, tracking out genealogy, and interviewing informants. Becker & Geer (1957) argue that participatory observation gives room for the collection of the most complete form of data for sociological studies. By adopting this method, I participated in everyday life experiences of research subjects in the three case universities. I spent a total of six months in the case universities during Study 1; five months during Study 2; and four months during Study 3 to enable me to make observations, carry out in-depth research interviews, attend university lectures, and visit key informants. I recorded my observations via field notes. I spent another seven months in communication with the case universities to enable research subjects to review and comment on their responses and the notes I took during participatory observation.

1.6 Research Contexts: Historical Overview of Nigerian University System

The three universities that were sampled in this study are based in Nigeria. In the context of this study, there are identified as University I, University II and University III. The three case universities are considered emerging universities given that they were established between 2005 and 2012 in a country where the first university was founded in 1948. University I is a privately owned by a sole proprietor and was established in 2005. University II is also a privately owned by a religious body and was established in 2006. University III is a publicly owned university that was established in 2011. It is owned by the Federal Government of Nigeria (FGN). The three case universities are a part of the evolutionary history of university education in Nigeria which started with the

establishment of the University College Ibadan (UCI) in 1948 as an affiliate of the University of London. The UCI was established during Britain's colonial rule in Nigeria in response to local agitation for the establishment of universities to promote the production of high-quality manpower and the socio-economic development of the country (Fafunwa, 1987).

Following the independence granted to Nigeria in October 1, 1960, four regional governments that comprised the Nigerian federation established four universities taking the number of universities in Nigeria from one to five by 1962. This was necessitated by the need to produce high-level manpower and to promote socio-economic and political development in the regions. The UCI, the only university owned by the FGN, was then upgraded to a full-fledged university by the Federal Government of Nigeria in 1962 and was renamed University of Ibadan. The other universities are the University of Nigeria (UNN), Nssuka, which was owned by the Eastern Nigeria Regional Government; the University of Ife, now Obafemi Awolowo University (OAU) and the University of Lagos (UNILAG), which were owned by the Western Nigeria Regional Government; and the Ahmadu Belllo University (ABU) which was owned by the Northern Nigeria Regional Government (Fafunwa, 1987).

The Nigerian Civil War of 1967 to 1971 caused an interruption to the evolution of universities in Nigeria. Consequently, immediately after the Biafran war the UNN, OAU, UNILAG and ABU were taken over by the ruling federal military government from the regional governments that established them (Amadi, 2011). This meant that their policies, aims and objectives had to be changed to align with those of the federal military government (Banjo, 1997). Given that academics played a critical role in the arguments that degenerated into the Nigerian Civil War, the assessment and interpretation of the role of universities by young military officers that took over governance in Nigeria resulted in conflicts between the federal military government and existing universities (Banjo, 1997; Sanda, 1992). Since Nigeria was under military rule during this era, the resources that were provided to universities began to dwindle and fall short of what it was between 1948 and 1962 (Amadi, 2011; Adeyemo, 2000). This development coincided with the fragmentation of Nigeria from four large regions to twelve smaller states. Suspicion had grown among the military ruling class that large regions could become rebellious and

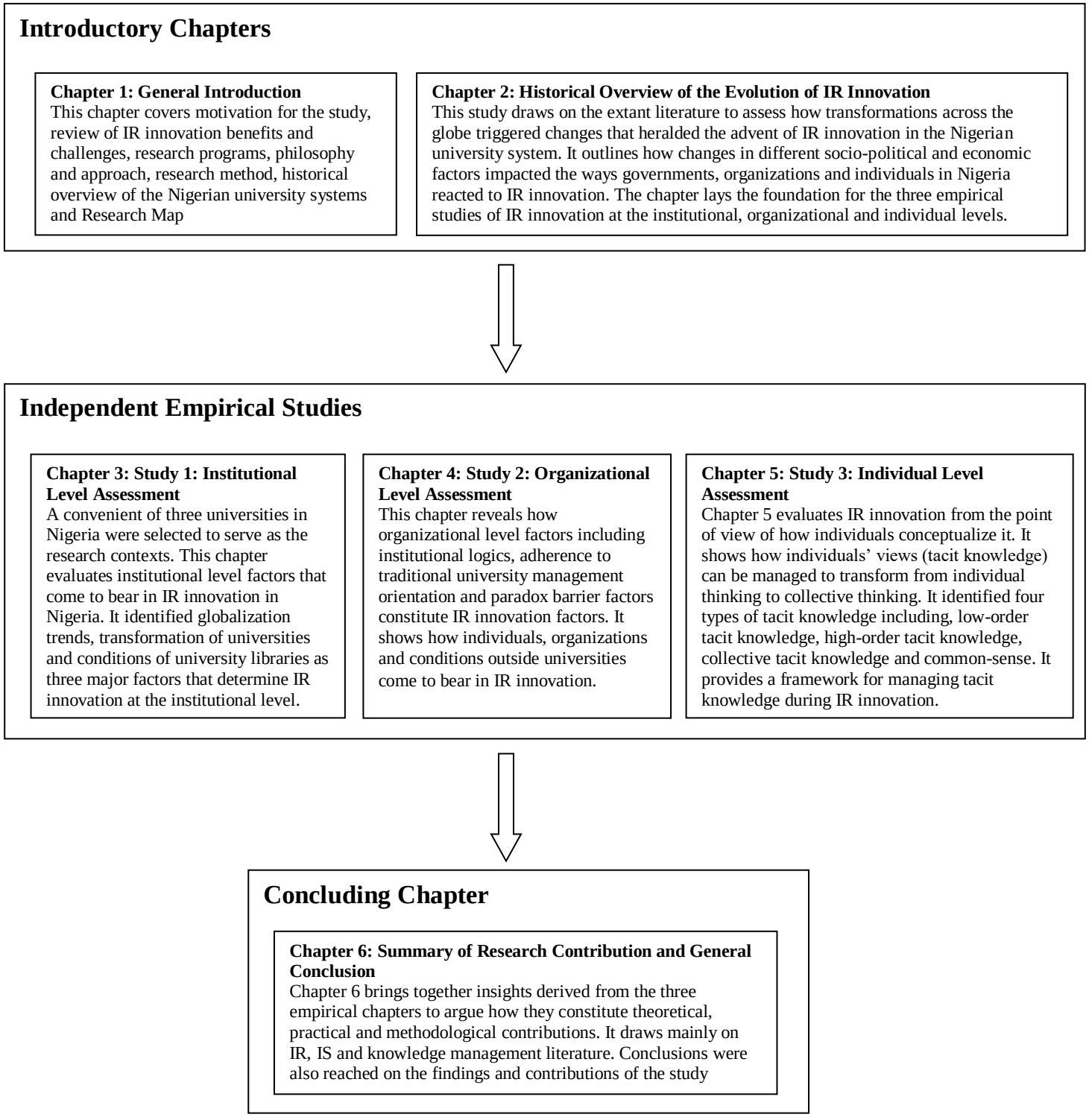
cause another civil war. The creation of states led to the evolution of state government owned universities in Nigeria from 1981. Given the dissensions between universities and military governments and the reduced economic power of the four regional governments that were divided into twelve states, resources given to Nigerian universities further dwindled.

The crises resulted in incessant strike actions that crippled Nigerian universities between the mid 1980s and 2000 (Amadi, 2011; Osagie, 2009; Hudu, 2000; NUC, 1983). NUC (1983) provides a good summary of what the evolution of university education in Nigeria looks like:

...the resilience of the universities to survive in the face of political uproar of the first republic, the military coups of 1966 and the horrors of civil war. They witnessed askance, the arrival of the statutory NUC in 1974...tremors of the nation-wide student unrest over fees and other issues of 1978 and the sudden flare up violence here and there in the universities...were all very trying but they were survived, at a cost admittedly (p. Xiii)

World Bank policies on reduction of public spending and reducing government funding for university education and shifting the cost to students significantly affected Nigerian universities during the 1980s and 1990s. Both state and federal governments reduced subventions provided to universities and encouraged the establishment of private universities. The creation of private universities in Nigeria was borne out of the many crises that rocked the Nigerian university system (Owolabi, 2000; Osagie, 1999). Global economic crises, reduced government support, a declining oil industry which reduced central government revenues, prolonged military rule and brain drain reduced Nigerian universities to shadows of their potential (Hudu, 2000; Banjo, 1997). These crises also impacted the academic information environment in Nigeria. Academics, researchers and students lacked access to required scientific knowledge; drastically reduced subventions to university libraries and devalued local currency resulted in canceled subscriptions to foreign journals (Nwagwu, 2013). The poor physical conditions of Nigerian universities during this era were considered by stakeholders that invented and promoted IR to be the kinds of conditions and problems of universities in developing countries for which IR technology was designed to provide lasting solutions. The next chapter presents historical overview of the adoption of IS in Nigerian universities. It shows the impact of the conditions of Nigerian universities on IR innovation.

1.7 Research Map



Chapter 2: General Literature Review: Historical Overview of the Evolution of IR

2.0 Introduction

This chaper looks at the history of IR within the Nigerian university system. It draws on the extant literature to present the impact of socio-political and economic events that occurred around the globe on those that occurred locally in Nigeria, which in turn influenced how IR innovation was received within the Nigerian university system.

2.1 Evolution of Challenges of Scientific Knowledge Management

The post-World War II era is an era characterized by unprecedented creation, use and abuse of scientific knowledge. Scientific knowledge, and the invention and proliferation of information and communication technologies (ICT) in developed countries was the geo-political epicentre of this feature of modern life (Giddens, 1991). Developing countries, particularly those in sub-Saharan Africa joined their counterparts across the globe and in the metropolitan centre after they gained independence from colonialism (Leachman, 2014; Heeks, 2010). Independence from colonialism led to the establishment of universities and other higher education institutions in African countries. The scenario resulted in a continental call for adoption of initiatives equivalent to those adopted in universities in other parts of the world. Such initiatives were necessary for access to scientific knowledge and adoption of information and communication technologies (ICT) (Karlsson, Srebotnjak & Gonzales, 2007; Siegel, *et al.*, 2004). Unfortunately, publishing companies that produce fee-based closed access to scientific knowledge at the turn of the 20th Century were mostly situated in Europe, the US and Canada. Although, a couple of these publishing companies set up their subsidiaries in developing countries, they maintained business strategies that hampered access to scientific knowledge **(**Carreiro, 2010; Ezema, 2010**)**. This was particularly disadvantageous for developing countries since they had to pay for relevant scientific journals either with local currencies or with scarce foreign currencies. Political instability, civil war, economic recession, dictatorship and unfriendly international laws, among others, also worked against the creation and use of scientific knowledge in developing countries (Russel, 2008; Olukoju, 2002; Powell,

1985). This was more profound in the late 1970s, 1980s and 1990s.

A new wave of international policies proposed that developed countries should assist developing countries in their efforts to attain their development goals (Arocena, Göransson & Sutz, 2015; Walsham, 2010; Adelakun, 2005). Much of the problems that developing countries faced that were superficially assessed in the past were exposed. One of the areas uncovered is the state of university education in developing countries. Extant literature underscored that universities are poorly funded, poorly managed and negatively influence by undemocratic governments (Ayoubi, & Khalifa, 2015; Bozeman, Fay & Slade, 2013). The dire conditions of university libraries in developing countries were also exposed. Most university libraries in developing countries lacked the resources and tools required to provide the wide range of library information services expected to be available in contemporary university libraries **(**Rasul & Singh, 2017; Moorefield-Lang, 2015; Ibrahim & Daudu, 2013). The issue of digital divide in developing countries as a result of deficiencies in information delivery systems that were not computerized was also highlighted. Digital divide contributes to the differences in availability of ICT in developed and developing countries. The issue of the unavailability of ICT, therefore, became visible as one of the challenges that developing countries face in their bid to use scientific knowledge to attain economic, social and technological development. This resulted in studies that emerged across the globe and in developing countries about the impact of digital divide on the advancement of developing countries (Venkatesh & Sykes, 2013; Ahmed, 2007). Furthermore, the transformation of scientific knowledge distribution from paper format to digital format added to the challenges that developing countries have to confront (Carriero, 2010; Ezema, 2010; Anunobi & Okoye, 2008), namely, the knowledge divide.

Knowledge divide denotes the gap between scientific knowledge available to developed and developing countries (Karlsson, Srebotnjak & Gonzales, 2007). Studies that focused on the knowledge divide began to look at the issues surrounding digital content creation across the globe. Outcomes of these studies show that the digital contents emerging from Europe, the US, Canada and China dominate those of other countries of the world, particularly developing countries (Ezema, 2013; Wyk & Mostert, 2011). The question therefore arose about how to generate and circulate digital scientific

knowledge in developing countries. This question was further made relevant by indications promoted by the globalist school in the discipline of development about the importance of local scientific knowledge to the attainment of development goals in developing countries (Arocena, *et al.*, 2015; Herath, 2009). Within this epoch also, issues concerning knowledge/information society began to emerge. Hence, questions about the extent to which developing countries can be categorized as knowledge/information societies were being discussed in the extant literature (Opoku-Mensah & Salih, 2007).

At the turn of the 21st Century, scholars in developing countries, particularly those in countries in sub-Saharan Africa started to look into the extent to which the scholarly publishing industry is complying with the adoption of digital systems (Ezema, 2010; Chan & Costa, 2005). This brought into limelight questions regarding the online presence of journals and the quantum of ICT facilities available to universities and academics in sub-Saharan Africa (Wyk & Mostert, 2011; Ehikhamenor, 2003; Rosenberg, 2002). When the open access initiative was first introduced, stakeholders were hopeful that is would solve the knowledge divide problem in developing countries resulting from closed access scientific knowledge distribution model of commercial publishers. This is because improvements in ICT innovation, particularly mobile technologies, had served to reduce the digital gap between developed and developing countries. Given the limitations of open access journals, stakeholders soon realised that scholars in developing countries are unable to fully benefit from the open access initiative (Ezema, 2013; Nwagwu, 2013). The publication fees authors are expected to pay to publish in open access journals deprived many scholars in developing countries from participating in the initiative (Solomon, & Bjork, 2012; Schroter & Tite, 2006).

2.2 Evolution and Themes of IR Innovation Research

The introduction of IR initiative that would be directly managed by universities was viewed by stakeholders as a means to mitigate the major challenge of distribution of scientific knowledge in developing countries.

A deluge of literature emerged on the IR initiative after Harnad's (2001) postulations about the possibility of the initiative to change the global scientific knowledge distribution landscape. Harnad predicted IR initiative's ability to support the

management of universities' intellectual property more effectively than the prevailing commercial publishers driven model and the open access publishing model. He further argued that IR technology has the potential to put an end to the dominance of the commercial publishers driven model. Following Harnad's predictions, scholars, particularly those in the LIS discipline, highlighted the benefits of IR. Some of the benefits outlined include the possibility to offer members of university communities and authors global visibility, and free and equitable access to global scientific knowledge (Lynch, 2003; Crow, 2002). Success stories reported in the literature highlighted the advantages offered by open access to scholars and gave advice on how to successfully innovate IR (e.g. Westell, 2006; Genoni, 2004). This resulted in country-based assessment of IR adoption (e.g. Rieh, *et al.*, 2007; Lynch & Lippincott, 2005) and admonition by key stakeholders about the need to adopt IR (Chan & Costa, 2005; Palmer, 2005). The promising potential of the IR initiative motivated scholars to persistently show concern for how it could be productively implemented at a global level (Ukwoma & Mole, 2017; Kim, 2010).

Studies were also conducted to identify factors that are barriers to IR innovation. Tensions surrounding tenure systems, academic reward, and quality of IR resources are major barriers to IR innovation (Kim, 2011; Davis & Connolly, 2007; Seonghee & Boryung, 2008; Kim 2007). Some scholarly works also report that publication policies , copyright considerations, and the nature of IR resources constitute IR innovation barrier factors (Kim 2011; Cullen & Chawner 2011; Salo, 2008; Kim, 2007; Okoroma & Abioye, 2017). In discussions, the implications of contexts on IR innovation emerged as important IR innovation factors (Nwagwu, 2013; Palmer *et al.* 2008; Walters, 2007). A major limitation of the body of literature in the IR innovation discipline is the non-integration of IR research themes to form a holistic IR innovation knowledge. Given that the majority of IR studies pick specific stakeholders (e.g. librarians and academics) leaving out many others (e.g. IT personnel, administrators, and those not directly within universities), findings in IR studies remain fragmented. A holistic study that engages various stakeholders and considers various aspects of IR innovation can be expected to generate a deeper understanding and discover social factors that influence divergence of stakeholders' views on IR innovation.

The current trend in IR scholarship has implications for the views of the IR community on IR as a scholarly knowledge management system. Although IR is implemented to serve diverse people that live and operate in diverse social setups, scholars still study it as phenomena that occur in the context of universities. For instance, while libraries are concerned with using IR to improve their information service offerings to university communities (Utulu & Akadri, 2014; Shearer, 2013), academics are interested in using IR to attract research grants and promote their reputation through their visibility and that of their institutions (Asogwa & Ugwuishiwu, 2016). For university management, the primary objective for supporting IR innovation may be to achieve improved performance in webometric ranking (Okebukola, 2011). A survey of the literature shows that every attempt at IS innovation has to do with meeting the needs of specific stakeholders, groups, organizations and industries (see for instance; Bailey & Ngwenyama, 2013; Light & Howcroft, 2010).

It suffices to say that there is a significant knowledge gap in the management of IR innovation so that stakeholders that can make meaningful contribution to the process are able to participate. Scholars in the IR field generally present IR innovation as it relates to librarians and academics. Most IR studies do not consider the dynamics of lifeworld that are characterised by different social contexts in the sense explicated by Zhao (2006; 2004), Schutz & Luckmann (1989), Schutz (1967) and Berger & Luckmann (1966). Schutz, Luckmann & Berger have argued that each social context is characterized by specific realities occasioned by the actions of four categories of social actors, namely consociate, contemporaries, predecessors and successors. This is particularly so when we consider the ways different contexts occupied by academics, administrators, librarians, IT personnel, students, publishers, scholarly meeting organizers, etc. are socially connected via the intersubjective social structures that shape the realities that determine how they connect (Zhao, 2004; Schutz and Luckmann 1989; Schutz, 1973). Furthermore, there are also factors related to professional frames, networks of practice, interpretive flexibility, mental models, among others, that influence the perception of individuals, groups, organizations and society (Bailey & Ngwenyama, 2013; Khoo & Hall, 2013; Khoo, 2005; Howcroft, *et al.*, 2004; Argyris, 1995).

Many IS scholars suggest, when investigating technologies, we should focus on

the intersubjective meanings enacted by social actors in their domains (cf. Avgerou, 2013; Howcroft, *et al.*, 2004; Orlikowski, 2010). Some IS scholars adopt theoretical concepts of institutional theory, structuration, formative context, community of practice and social influence, among others, to be enable inquiry into the role that intersubjective manings in shaping social actors approaches to IS innovation. Examples can be drawn from studies done by Sahay & Mukherjee (2015), Linderoth (2014), Ngwenyama & Nielsen (2014), Light & Howcroft (2010) and Liang, Saraf, Hu, & Xue (2007). Existing IS studies rely extensively on literature emanating from diverse fields in the social sciences -- sociology, politics, cognitive sciences and organization science -- to answer questions on how the diversity of IS stakeholders and contextual differences determine the views of IS innovators and users at different stages of IS projects. Since there has not been deep-rooted social analysis of the IR innovation phenomena, there is a huge gap in knowledge on the role of social realities outside universities on IR innovation. Furthermore, an assessment of the interactions among inter-subjective notions and ideas that determine IR innovation in universities is needed.

Extant IR literature sheds a light on the extent to which IR scholars and practitioners have been able to address IR innovation realities as socially constituted (e.g. Effah & Abbeyquaye, 2013; Howcroft, *et al.*, 2004) and socially constructed (e.g. Orlikowski, 2010; Lyttine & Newman, 2008; Checkland, 2000) phenomena. The pervasive view in the IR literature may encourage IR scholars and practitioners to understand IR as a technology that involves technical and social systems, the technical aspect being more important (Pinfield, 2015; Shearer, 2013; Jones, 2007; Plamer, 2005; Genoni, 2004). It follows that, thus far, the IR literature conceptualizes IR innovation from the perspective of technology determinism. Views in technology determinism represent instrumental view of workforce as made up of man and machine, where machine determines how man thinks and works (Smith & Max, 1994). These views underpin Harnad's (2001) speculation on the 'capability' of IR to change the global scholarly landscape. Harnad's postulations were articulated irrespective of the fact that IR innovation was triggered by various social factors that emanated as a result of social changes experienced across the globe (Harnad, 2001).

A large proportion of IR literature has focused on the impact of IR on the

activities of librarians and academics and little attention has been paid to the impact of librarians and academics on IR innovation. It follows that IR scholars have not addressed cognition, technological arrangements, professional frames, network of practice, and social embeddedness factors that influence IR innovation. If IR innovation is viewed as constitution and construction of technology that is driven by cognition, IR scholars could help the IR community to see the extent to which IR stakeholders are socially (dis)connected. IS stakeholders that are socially disconnected constrain the formation of integrated social relationships that promote IS innovation. Given that many stakeholders that are involved in the IR innovation cycle have been left out of the analysis done so far, IR innovation research that look into cognition, social constitution and construction of technology assumptions have become all the more necessary. The three studies that comprise this thesis provide important contributions to IR knowledge available to researcher and practitioners. Given that the study was designed with the aim to assess IR innovation factors at institutional, organizational and individual levels, it provides insights into the wide range of social actors that influence IR innovation. It also uncovers relevant factors inherent at global, national, organizational and individual levels. The study claims IR innovation is a socio-technical process that involves a wide range of stakeholders.

Chapter 3: Empirical Study 1

Institutional Level Assessment:

Globalization Trends, University Transformation and Conditions of University Libraries as IR Innovation Barrier Factors

Abstract

Institutional repository (IR) is an information system (IS) used to implement an open access initiative. It holds great benefits for developing countries as it advocates for distribution and free access to scientific knowledge. The limited access to scientific knowledge in developing countries necessitates the deployment of radical technology that serves as an alternative to the closed access model of commercial publishers. Unfortunately, very few universities in developing countries have functional IR despite its potential to promote free access to scientific knowledge. This study aims to develop theoretical and practical insights on barriers to IR innovation in developing countries. The interpretive inductive research approach was adopted to support this aim. The snowball sampling technique was used to identify research subjects that are relevant to achieving the study's aim. Participatory observation, in-depth interview and archives were used as instruments of data collection. Qualitative data were analysed using thematic data analysis technique. The study reveals the influence of globalization trends, university transformations and conditions of university libraries on IR innovation barrier factors at institutional level. A comparison of the study data to insights in the extant literature revealed that the common assumption of many IR scholars that factors that determine IR innovation are inherent within universities is not valid. The study reveals novel barrier factors and contributes new theoretical and practical insights to the disciplines of IS implementation and more specifically to the discipline of information systems in developing countries.

Key words: Institutional Repository Innovation; Information Systems Implementation; Globalization Trends; University Transformation; University Libraries; Information Systems in Developing Countries

3.1 Introduction

A community is characterized as a group of groups of people living together within a defined or undefined socio-physical space. They share ideologies and values, and work toward common interests (Gamble & Weil, 2008; Zhao, 2004). The portrayal of universities in terms of the popular social science notion of communities promotes the sentiment that university administration and management ought to be handled by academics alone and the assumption that universities are insulated from the influence of their host communities and the global community at large (Altbach, 2015). A critical look at universities, however, indicates that those that advance this notion have not considered salient contemporary issues. These include the role of globalization trends and the transformations in universities in contemporary times in opening universities to influence by their host communities and the larger global community. Globalization trends have to do with the ease with which information and ideas, and people move across local and international boundaries (Mau & Ulyukaev, 2014). They are propelled by advances in ICT, transportation and government policies on the movement of people across international boundaries (Steger, 2009). Recent transformations in universities via adoption of new management techniques have facilitated the participation of diverse stakeholders, including those outside the boundaries of universities, in the management and administration of universities (Akalu, 2014).

The findings of this study show that the ease with which information and ideas and people move across local and international boundaries enable the case universities' host communities and the global community to influence IR innovation. Findings also show how these conditions led to IR awareness derived from multiple (and conflicting) sources, uncoordinated crave for ICT innovation, and the adoption of IR innovation success factors that do not align with local needs. Study findings also show how contemporary transformations experienced by universities made the case universities to adopt new managerialism, get involved in activities that increase the cost of running, and suffer from funding problems that negatively impacted on IR innovation. These findings indicate that universities are embedded in their host communities and the global community. It can, therefore, be concluded that for IS innovation to be successful in universities, innovators should pay attention to factors both within and outside

universities (Bozeman, *et al.*2013). Disappointingly, stakeholders see through the lens of the notion that universities are separate communities dominates when thinking about their experiences with IR innovation (Shearer, 2013; Abrizah, *et al.*, 2010). For example, Harnad (2001) proposed that IR is an information service that serves scholarly information needs of a university community. Similarly, Lynch (2003) described IR as "…a set of services that a university offers to members of its community for the management and dissemination of digital materials created by the institution and its community members (p. 3)." Ifijeh (2014) explained IR as medium for disseminating scarce scholarly works produced by universities. While the current assumption about the nature of universities and its effects on how IR innovation is conceptualized seem to represent valid concepts, this study shows that the concepts are lacking.

In the IS discipline, the impact of globalization trends and industry transformation on IS innovation has not been adequately investigated. IS scholars have also not investigated IS innovation in universities as much as in for-profit organizations (Venkatesh, Croteau & Rabah, 2014; Avgerou, 2010). The few studies that focused on universities did not assess how globalization trends and transformations in universities together impact IS innovation (Uwadia, *et al.*, 2006). In contrast, in the ISDC discipline, it has been argued that factors that come to bear during IS innovation in developing countries go beyond those within organizations situated in developing countries (Sahay & Mukherjee, 2015; Sahay, 2006). However, ISDC scholars have not fully factored globalization trends and industry transformations in their assessments of determinants of IS innovation in universities in developing countries. ISDC studies that have attempted to look at how globalization trends and industry transformations impact IS innovation did so based on technology adoption and diffusion in other types of organizations (Avgerou, 2010; Al-Ghatani, 2003). They focused on how technology produced in other parts of the globe is transferred, adopted and diffused in developing countries as a result of globalization trends and industry transformation (Chatterji, 2016).

Other aspects of the findings show how current conditions of the case universities' libraries impact IR innovation. Findings in this study indicate that current conditions of the case universities' libraries are characterized by inadequate staff, book gift culture and hierarchical organizational structure that are caused by unintended

consequences of the transformations the case universities experience as a result of globalization trends. Issues relating to staffing and its impact on the performances of libraries have been addressed in the extant literature (Moore-Field, Lang, 2015; Gremmels, 2013). Banks & Pracht (2008) specifically studied how the transformations libraries experience in the recent past impact staffing. The growth in studies that assessed staffing in university libraries is because staffing goes a long way to determine the extent university libraries are able to cope with the pressures of contemporary library information services delivery. This study shows how institutional level factors combine with organizational level factors to cause the inadequate staff that hampered IR innovation in the case universities. IR scholars that identified inadequate staff as barrier to IR innovation did not show any connection between it and institutional and organization levels factors (e.g Nwagwu, 2013).

The book gift culture plays a part in the current state of IR innovation in the case universities libraries. Interestingly, the book acquisition processes of case universities are impacted by the gift culture that has arisen due to digitization trends in Europe, the US and Canada. In the 1980s and 1990s, the adoption of digital library information delivery systems by universities in Europe, the US and Canada meant that more gifts in the form of books are received by university libraries in developing countries, including those in Nigeria. This impact of this trend on most university libraries in developing countries has not been given due attention. This study shows that the book gift culture has resulted in the reduction of resources committed to purchasing books in the case universities' libraries, which in turn has had an effect on IR innovation. This study shows that the book gift culture jeopardizes the adoption of digitization culture by the case universities. Previous studies on the negative effect of book gifts on libraries did not address its influence on resource allocation for the purchase of books and digital resources. For instance, Buis (1991) addressed issues such as cost of processing, timelines of acquisition plans and cost of storage and discarding of unwanted book gifts. Later studies warned academic libraries and their stakeholders on the impact of book gifts on the extent to which university libraries are able to meet their overall library information delivery goals (Sturges, 2014; Edem, 2010). This study extends these insights by identifying and describing the negative impact of over-reliance on book gifts

on IR innovation. The most important revelation in this study is the exposition of the connection between institutional level factors and organizational level factors in the endorsement of a book gift culture that has in turn had a negative impact on IR innovation.

A factor that contributed to the current state of university libraries described in this study is the improper implementation of hierarchical organizational structure. Given that university libraries are organizations in their own right, they are expected to be structured as other organizations are structured. An organization may be flat, hierarchical or hybrid in structure (Morgan, 1997; Frederickson, 1986). The case universities were structured with the hierarchical organizational structure. Hence, they could not adequately manage communication processes to support IR innovation. Most studies that deal with the impact of organizational structure on organizational performance are based on organizational level assessments (Ashkenas, Ulrich, Jick, & Kerr, 2015; Zheng, Yang, & McLean, 2010; Auvinen, 2001). This is also visible in IS innovation studies that assessed the role of organizational structure in IS innovation (Shao, Feng & Hu, 2016; Cresswell & Sheikh, 2013; Raymond, 1990). This study shows that institutional factors can promote the ways organizational structures are enacted during IS innovation. This study, therefore, provides answers to the following research question: *What are the barriers of IR innovation in Nigerian universities and how did the barriers evolve?* It identifies three institutional level barrier factors that are characterized by nine indicators as shown in Figure 3.1: Dynamics of IR Innovation Barrier Factors at Institutional Level. Because this study adopted an inductive research approach, the literature reviewed in the segment that follows is driven by its major findings.

3.2 Literature Review

Current notions about the nature of universities encourages stakeholders to think separately of society and universities. Universities are viewed as having objective existence separate from the societies where they are situated and, in effect, the global community (Okebukola, 2015; Akalu 2014; European Commission, 2005). Scholars, therefore, have aligned with positivist notions in assuming that the factors responsible for attaining the statutory objectives of universities are determined only by occurrences within universities (e.g. Okebukola, 2015; European Commission, 2005). Stakeholders

assume that the transformations experienced by universities, including those that impact IR innovation, are triggered by factors within universities. The IR innovation literature has largely ignored the role of globalization trends and transformations in universities experience leading stakeholders to assume that key IR innovation barrier factors only relate to academics and scholarly publishing orientations inherent within universities (Utulu & Akadri, 2014; Abrizah, *et al.*, 2010; Davis & Connolly, 2007). Other examples can be drawn from studies conducted to assess successful implementation of IR innovation (e.g. Pinfield, 2015; Utulu & Akadri, 2014; Shearer, 2013; Westell, 2006). Overlooking globalization trends such as access to sources of information and ideas about ICT innovation leads scholars to neglect to account for how universities come about their views of IR innovation, the IR innovation success factors they identify and the effect of these on IR innovation. Findings in this study show that the diversity in sources of information regarding IR innovation led case universities to adopt success factors that do not align with local needs (Levitin, 2014).

Scholars of earlier studies assume that universities are insulated from the effects of globalization trends and, consequently, ignore them when assessing factors that determine IR innovation (Shearer, 2013; Abrizah, *et al.*, 2010; Bui *et al.*, 2010; Weill, 2009). The reason why scholars ignore the effects of globalization trends and transformation of universities on IR innovation can be attributed to non-use of theories like phenomenology of everyday life (Zhao, 2004; Schutz & Luckmann, 1989; 1973; Schutz, 1953). The theory of phenomenology of everyday life suggests that the experiences of social groups are determined by social actors that may be categorized as consociates, contemporaries, predecessors and successors (Zhao, 2004; Schutz & Luckman, 1989). In other words, experiences of universities with regards to IR innovation can be assumed to be determined by (1) those within universities (consociates); (2) those outside universities (contemporaries), (3) those that have been involved with universities in the past (predecessors), and (4) those that will be involved with universities in the future (successors). According to Schutz & Luckmann (1989), consociates are social actors that share the same time and socio-physical space, for instance, members of a university community. Contemporaries share the same time but occupy different socio-physical spaces. Examples are those whose activities influence

how universities run (e.g. commercial publishers, parents, funding agencies, regulatory agencies, etc.) Predecessors are those who have had dealings with the university in the past (e.g. retirees, past administrative office holders, etc.). Successors are future members of the university community (e.g. prospective students and staff, etc.)

Use of theories such as the phenomenology of everyday life is pivotal to factoring globalization trends and organizational transformations in case universities into the assessment of IR innovation. It allows for the exposition of the fluid and unpredictable nature of social factors that connect the case universities to other social entities across the globe. Studies focused on IS innovation in universities continue to ignore the influence of events and people living in diverse socio-physical contexts outside universities on IS innovation in universities (Andersson & Hatakka, 2010; Uwadia, *et al.*, 2010; Alavi, Yoo & Vogel, 1997). This is despite the fact that some scholars in the IS discipline adopt the interpretivism philosophy and claim that universities are not structured and concrete organizations. Many IS studies did not show how the fluid and unstructured nature of universities influence IS innovation in the ways Kudaravalli, Faraj & Johnson (2017) and Ngwenyama & Nielsen (2014) did with their assessment of IS in for-profit organizations. This limitation results from a lack of recognition of organizations as open social systems that are influenced by different types of social actors (Sahay & Mukherjee, 2015; Zhao, 2006; Daft, 2004; Morgan, 1997).

It suffices to say that globalization trends and the transformation that universities experience in contemporary times are two social occurrences that impact each other. For example, in the European Union (EU), various documents were prepared to encourage universities in EU to transform based on the societal changes in the EU and global changes at large (European Commission, 2005). Consequently, stakeholders argued that for a university to justify its billing, that it must use ICT, achieve interdisciplinary cooperation, use marketing mechanisms, adopt new evaluation and accreditation mechanisms, partner with industry and include students and parents/guardians in university governance (Nielsen, 2014; Buchanan & Devletoglou, 1971). In developing countries, there are similar documents prepared by various governments in collaboration with UNESCO and the World Bank. The documents show the transformation trends universities in developing countries were encouraged to pursue (Okebukola, 2015; Akalu,

2014). These include expansion to accommodate more intakes, ICT adoption, cooperation and collaboration, resource sharing, partnership with industry and adoption of new management logics that involves inclusion of both internal and external stakeholders in the management of universities. The ideas were derived from documents that were prepared for developed countries even though the two classes of societies have different socio-cultural, political and economic backgrounds (Akalu, 2014; Okebukola, 2009).

Universities in developing countries experienced transformations that resulted in changes to their management and administrative orientations (Okebukola, 2014; Akalu, 2014), establishment of private universities (Okebukola, 2014; Amadi, 2011; Osagie, 2009) and quality assurance, peer review and compliance strategies (that were used as mechanisms to control them) (Shabani, Okebukola & Oyewole, 2017; Akalu, 2014; Okebukola, 2006). In Nigeria, for instance, there is an exponential growth in the number of universities in the country from one to five between 1948 and 1971, five to twenty between 1972 and 1980, and twenty to one hundred and fifty-two between 1980 and 2016. Also, there are changes in the models used for managing universities, and verifying and accrediting academic programs in the country (Okebukola, 2006; 2009; Erinosho, 2013/2014). Furthermore, a number of universities have adopted ICT for academic and administrative functions and operations (Oduwole, 2013; Ehikhamenor, 2003).

While these transformations appear positive, they also lay heavy burdens on Nigerian universities, particularly privately-owned ones, as a result of local conditions (Okebukola, 2015). Much of the ideas that were propagated in Nigeria on how to improve the quality and productivity of Nigerian universities were based on ideas that policy makers adopted from abroad. The Internet is also awash with documents that were produced by individuals and organizations without first-hand experience of everyday life in Nigeria. Apart from facilitating the influence of contemporaries on the transformations experienced by Nigerian universities, the Internet also enables stakeholders outside and within Nigeria to become consociates (Zhao, 2006). Hence, it becomes easy for stakeholders in Nigeria to apply foreign ideas to local conditions and establish them as bedrock of their university transformational agenda (e.g. Okebukola, 2009). Strategies

for IR innovation studies in Nigeria have also been developed in a similar way with consequences to the outcomes of the studies (Okoromoma & Abioye, 2017; Ukwoma & Mole, 2017; Utulu & Akadri, 2014; Ezema, 2013; Zaid & Okiki, 2014; Lynch & Lippincott, 2005). It is disappointing that stakeholders in Nigeria have not paid attention to arguments about a wide range of institutional level factors that may impact IS innovation in dusiceveloping countries that have been underscored in the literature (e.g. Bailey & Ngwenyama, 2016; Avgerou, 2010; 2008; Walsham & Sahay, 2006; Heeks, 2002).

The conditions of university libraries also influence IR innovation. Although conditions of university libraries have to do with organizational level issues, the evolutions of those conditions were determined mostly by institutional level factors. For instance, one primary indicator of those conditions is insufficient staff. Over the years, the number of staff available to universities has been determined by several factors. An important determinant of staffing in university libraries is the large array of services they are expected to offer due to a growing user population (Moorefield-Lang, 2015; Torras & Saetre, 2016). Consequently, there is an association between services rendered by university libraries, the expected number of users and staffing in contemporary university libraries (Jordan, 2017; Rasul & Singh, 2017; Musoke, 2008). Furthermore, an influx of ICT based library information services and a growing expectation of variety in types of information resources available in university libraries also determine their staffing (Xu, Kang, Song & Clarke, 2015; Walters, 2014). It follows that transformations in information needs due to educational and pedagogical demands and the proliferation of ICT based information services combine to increase the challenges of staffing in university libraries.

These factors affect every university irrespective of their geopolitical location, be it in developed or developing countries. A surprising finding in this study is that the staff available to the libraries in the case universities remained insufficient despite being affected by all the institutional level factors that determine staffing in contemporary university libraries. Two of the three case universities have different categories of students: full-time, part-time, undergraduate and postgraduate. They also have students who receive their education off-campus. The third case university did not have these

categories of students, however, it has registered over six thousand students in the four years of its existence. It follows that the case universities' libraries are expected to deliver quality information services that meet the needs of large numbers and different categories of users. They are also expected to adopt ICT to deliver contemporary library information services similar to libraries around the world. Hence, the fact that they have very limited numbers of academic librarians, paraprofessional librarians and other support staff was surprising. The effect of this on IR innovation was enormous as it affected the number of academic librarians that were dedicated to IR innovation. In the past, insufficient staffing in university libraries had not been identified as one of the barrier factors that hamper IR innovation. IR innovation barrier factors that are often linked to universities libraries are those that have to do with awareness and perception among academic librarians, availability of ICT facilities and university library readiness to adopt digital library service initiatives (Antell, Foote, Turner & Shults, 2014; Ifijeh, 2014).

Conventionally, libraries acquire information resources in three ways: purchase, gifts and bequeathments (Johnson, 2014). While purchase has to do with buying information resources from the book market either directly or indirectly, gift has to with receiving information resources free of charge from governments, individuals and organizations. Bequeathments information resources often received from individuals who have made legally binding commitments for their information resources to be given to the library of their choice upon their passing (Edem, 2010). Reverend John Harvard's book gift to Harvard University Library in 1863 is one the many examples of how university libraries receive book gifts (Carrico, 1999). It follows that book gifts play a very significant role in the development of most university libraries, particularly those in developing countries. Acquisition of library information resources through gifts became popular in the 1990s as a result of globalization trends. However, scholars have shown that book gifts to university libraries may not be as beneficial as purported (Zell & Thierry, 2015). The use of gifts as the primary source of acquiring library information resources is warned to have negative effects on the development goals of libraries in developing countries (e.g. Sturges, 2014; Buis, 1991). This propelled the gift culture

where governments, individuals and non-profit organizations in developed countries donate books to universities in developing countries.

In Nigeria for example, most university libraries have received book donations from countries in Europe, the US and Canada (Ibrahim & Daudu, 2013; Edem, 2010). Unwittingly and unfortunately, Nigerian universities have developed an unhealthy culture of reliance on such gifts as an organic part of their institutional acquisition processes, which has encouraged a decline in financial resources from domestic funders for the purposes of acquisition of books by university libraries. Foreign book donations have bred, unsurprisingly, a culture of dependency among Nigerian university administrations and library officials (more of this is discussed later). This study illustrates the negative legacy of such gift donations to Nigerian recipients. The phenomena, while well-intended, have had unintended, negative consequences for Nigerian universities when it comes the evolution of IR innovation within their domain. Key stakeholders in the case universities, particularly founders and vice-chancellors, reduced funding allocated to libraries for the purposes of acquisition of resources. While insights in the literature have exposed foreign culture transfer, dumping and administrative and processing costs as major negative effects of book gifts on university libraries (Zell & Thierry, 2015; Sturges, 2014; Edem, 2010; Buis, 1991), prior studies have not established the connection between library acquisition funding culture, book gifts and IR innovation.

There exists a genuine need for new thinking in IR innovation that is driven by current realities surrounding the nature of universities. Attention must be paid on how globalization trends and the philosophies behind the transformations universities experience in contemporary time impact IR innovation. Problems connected to globalization trends such as uncoordinated crave for ICT innovation, multiple and conflicting sources of IR awareness and adoption of success factors that do not meet local needs must all be ameliorated. This may require development of practical and theoretical knowledge to better understand the evolution of these factors and how they impact IR innovation in developing countries. It is assumed that such efforts will help scholars address new factors impeding IR innovation in developing countries. Such efforts in combination with appropriate research ontologies, epistemologies and approaches are expected to increase the likelihood that new ideas are derived directly from developing

countries to drive local IR innovation. In this study, an inductive research approach, interpretivism and snowball data collection technique were adopted to expose and explain the interference of globalization trends, transformation of universities and traditional university management orientation in IR innovation in local settings and to develop an IR innovation barrier model that is appropriate for developing countries. The study provides answers to the following research questions: *What are the barriers of IR innovation in Nigerian universities and how did the barriers evolve?*

3.3 Organizational Contexts of Study One

University I

University I has a plan for IR innovation. The university's library was at the forefront of its IR innovation. The head librarian selected the Head of Serials Unit to be in charge of IR innovation. He gave him a strict directive to report all issues concerning IR innovation to him. As a result, other librarians were not carried along in the IR innovation plans of the university. This made it difficult to reconcile conflicting ideas about IR innovation that were held by the librarians. Conflicting IR innovation ideas were fuelled by the diversity in sources of information that informed the librarians' background knowledge about IR which, in turn, contributed to an uncoordinated crave for ICT innovation. Moreover, it did not recruit the targeted number of students to its academic programs. Prospective students considered the university's tuition fees too high. Hence, the funds available for physical development and technology innovation were not enough to accommodate IR innovation. A further detractor was the unhealthy conditions of the university library. The library had inadequate staff resources to support its services to users and operated hierarchical organizational structure that hampered effective communication of IR innovation issues.

University II

University II also has good plans for ICT innovation. It established two ICT units to drive its ICT plans. While one of the units is in charge of procurement and maintenance, the other unit is in charge of training. The two units are required to advise university management on all ICT innovation projects it embarks on. This constituted one of the IR innovation barriers in the university. This is because the two heads of ICT units did not have enough knowledge about IR. When the library introduced IR to them, they

confused it with other IT based library information service tools. Hence, they did not lend their support to IR innovation. There was also the challenge of conflicting IR innovation ideas among academic librarians in the university which made it difficult for them to have a common front when pushing their case for IR innovation. Another challenge that hampered IR innovation is the number of ICT projects the university was pursuing. The university displayed uncoordinated crave for ICT projects which made resources it commits to IR innovation inadequate. The resources available to the university were also affected by the number of registered students it was able to admit. Prospective students felt that tuition fees were too expensive. Hence, the tuition fees it collected from the students it admitted could not add up to the amount it required to effectively fund all its ICT projects, particularly IR innovation. This also affected the conditions of the library. The library had inadequate staffing levels, an enshrined book gift culture that affected the resources it received for acquisitions and a hierarchical organizational structure slowed down by middle level managers.

University III

The first unit created, according to University III's ICT plans, was the ICT unit. Secondly, it deployed major ICT projects across the university, including university library, before staff were employed. This resulted in conflicts between the ICT unit and the library. Librarians refused to participate meaningfully in IR innovation given that the ICT unit had already implemented it before they were employed. Hence, the support IR innovation needed to grow in the university was hampered by the conflict between the ICT unit and the library. Apart from this, the university also has issues with funding the numerous ICT projects it embarked upon. Although it has many students (about six thousand undergraduate students), the tuition it charges was determined by the Federal Government of Nigeria. The tuition fees, therefore, were short of the amount required to meet the general running costs of the University and the expenses of its ICT projects. This also affected the conditions of the university library. Its staffing levels were inadequate to service the needs of its users. It also depended heavily on book gifts as means of resource acquisition and operated a hierarchical organizational structure which hampered effective communication of IR innovation issues within the library.

3.4 Research Methodology

3.4.1 Research Philosophy

There are four assumptions that have been embraced by IS scholars and drive research in the social. These are ontological, epistemological, methodological and axiological assumptions. According to Burrell & Morgan (1979) the four assumptions determine the nature of social sciences. They inform the ways social science researchers spell out their beliefs about reality, the actions and processes that constitute valid scientific inquiry, the development of knowledge, and the nature of knowledge (Saunders, *et al.*, 2009; Cavana, Delahaye & Sekaran, 2001; Orlikowski & Baroudi, 1991; Weick, 1983). Given these conditions, this study's ontological stance is interpretivism. In other words, the study is based on the belief that there is no reality outside of the social actor and that reality is socially constructed (Deetz, 1996; Burrell & Morgan, 1979). The importance of social beliefs and culture to IS research requires the adoption of empirical approaches that focus particularly on human interpretations and meanings (Checkland, 2000; Checkland & Holwell, 1998; Walsham, 1995). The implication of this is that the study conceptualizes research subjects as social actors that interpret their everyday life realities according to the meanings that are ascribed to roles within the contexts of where they are enacted. The study also interprets social roles of the research subjects in accordance with the researcher's own meanings, giving opportunity for dual interpretation of phenomena observed.

3.4.2 Specific Research Ethics

In order to meet important ethics requirements, research subjects were visited after each study data had been analysed and discussed as presented in paper form. This allowed research subjects to see how the data collected from them were used and how it will appear in the public domain.

3.5 Research Method

3.5.1 Interviews

In-depth interview has been described as vital to qualitative data collection, particularly for the purposes of research studies that adopt inductive research approach. This is because it allows the researcher to engage research subjects in question and answer

sessions that help tease out fundamental issues about the research question. It is normally employed for small sample sizes and intense interrogations of participants to delve deep into a given subject that is novel and may not, ordinarily, be easily teased out (Boyce and Neale, 2006). The in-depth interviews were unstructured by design such that data collected was spontaneous and emerging. Issues discussed evolved through lengthy discussions with research subjects. The interview sections held during this study lasted between forty-five to sixty minutes.

Table 4.1: Number of In-Depth Interview held during Study One

Category	**Participants**	**No. of Interviews**
Academic Administrators	Deans Head Librarians	4 3
Staff	Academics	10
	IT Staff	4
	Librarians	6
	Administrative Staff	3
Total Number of Interviews		**30**

3.6 Research Process and Data Analysis

The data analysis technique used in the study is thematic data analysis (Thomas, 2006: Braun and Clarke, 2006). The software ATLAS.ti was used to actualize this. Themes regarding IR innovation barrier factors were identified and explained. The procedure followed included in vivo coding of relevant information, identification of relevant quotations that mirrored identified themes, and presentation of narratives to explain the barriers of IR from the empirical data. This involved reading and re-reading empirical data several times until hidden thought patterns, motives, underlying interests and meanings revealed themselves. Theoretical elaboration was conducted afterwards as a means of building new theories of IR innovation.

3.6.1 Research Process

Step 1: I gained access to the case universities in the following ways. In University I, I was introduced to the librarian in charge of IR innovation. In University II, an academic staff member introduced me to the library and other units of the university. In University III, I was introduced to an administrative officer who provided a guided tour of the University's administrative and academic structure, during which I observed facilities, listened to people's conversations and asked questions. I recorded my observations and

discussions in my research field notes.

Step Two: I re-evaluated and improved on the research question that informed the study. Initially, the research question was "What are the barriers to IR innovation in Nigerian universities?" Re-evaluation after step 1 resulted in the adding of a second research question: "How do IR innovation barrier factors evolve?" The informal short interviews during step 1, together with my observations, helped in reshaping the research question informing study 1 to the following: *"What are the barriers of IR innovation in Nigerian universities and how did they evolve?"*

Step Three: Here, in-depth research interview sessions were conducted. Research subjects were advised to fill-in and duly sign a research consent form. This was done by some research subjects before the in-depth interview, while some asked to do so after the in-depth interview. Participatory observation took place in the offices I visited and engaged in interactions and discussions. I also walked around academic and administrative buildings, stayed at lobbies to chat with people and visited libraries, laboratories and related facilities. All in-depth interviews were recorded using Samsung Galaxy Note. This took about four months to complete in the three case universities. Two months were spent going back and forth with the case universities to double check and validate research subjects' responses. A total of six months was spent during Step 1.

Step Four: Secondary research data was collected from archives such as websites, staff handbooks, and research and publication handbooks. Data collected from archives was used to validate data collected during in-depth interview and participatory observation. Archival sources were assessed one by one to collect data that were relevant to the study.

Step Five: Research data was analysed with ATLAS.ti software. Some research subjects were revisited to seek clarifications on thoughts expressed that were found to be unclear during data analysis.

Step Six: Study one was written. In this step, theoretical elaboration of findings weremade. This aided in the choice of an appropriate research model for the study. My reflections on barriers to IR innovation and my experiences in conducting the study were recorded.

3.7 Empirical Findings

Globalization Trends

Uncoordinated Crave for ICT Innovation

An important finding in the study is the case universities' uncoordinated interests for IT innovation; the lack of coordination came about because the number of projects they embarked upon far exceeded their resources for ICT innovation. Unfortunately, stakeholders in the case universities did not recognize the unconscious influence that globalization trends had on their ICT innovation decisions. As a result, they inadequately assessed their ICT plans and, consequently, created constraints against IR innovation. The universities embedded their implicit ambitions for ICT innovation into their visions. This resulted in the establishment of ICT units, the automation of administrative processes and the provision of centres such as computer laboratories, computer centres and virtual libraries where ICT can be used by members of the universities' communities.

A good example of the impact of uncoordinated interests for ICT results on barriers to IR innovation can be drawn from the experience of University I's head librarian: "[w]*hile at the United Kingdom I visited a number of libraries and observed that their most recent offering is institutional repository*." It follows that the head librarian's interest in IR was driven by the interest his university has shown for every possible ICT that can be used by the university to project its image as an ICT driven institution. Hence, he may not have asked adequate and appropriate questions about the factors that may work against IR innovation in his university. Given that he saw IR in a library, he concluded that it is a new library offering in the mode of library automation services, subscription services and other forms of IT based information delivery services. He therefore argues that "[t]*he library and the academics are the major [IR] stakeholders. The faculty are the major people that produce all the research output and the library is expected to coordinate and make it available to the world*." By not taking his time to find out about the wide range of people that constitute IR innovation stakeholders, he enacts a behaviour that indicates uncoordinated crave for ICT innovation. This is the reason why he referred to IR as "…*libraries…recent offerings*…." without considering that the number of days he spent in the UK would not have been

enough to uncover the wide range of innovation experiences the university he visited had during IR innovation.

Uncoordinated crave for ICT innovation was also identified in University III where library automation and IR innovation were done by the ICT unit without taking into account the importance of involving librarians and other stakeholders. A librarian in University III pointed out that "*...most of the ICT staffs were actually here before we were employed. So these things [automation software and IR platform] have actually been subscribed to before some of us came in (sic).*" It follows that the uncoordinated crave for ICT in University III resulted in the establishment of an ICT unit mandated to provide ICT facilities, including IR, for every unit of the university without the involvement of those expected to use the ICT facilities. This resulted in the acquisition of facilities that were not according to the specifications required by those who were to work with them. It also resulted in conflicts between the ICT unit and librarians who were expected to promote IR innovation in the university, and, ultimately, the inability to achieve the ends set for IR innovation.

In University II, two ICT managers were employed to handle two different areas of ICT innovation, i.e., two independent ICT units. One of the units is responsible for procuring, installing and maintaining ICT facilities. The second unit serves as user training and education unit. The two units are also expected to advise university management on the selection of ICT projects. While this seems to be a perfect strategic arrangement to manage University II's goals for ICT innovation, it resulted in some challenges. For instance, because the heads of the two ICT units did not have an adequate understanding of IR, they did not see IR as a technology that will help extend University II's ICT vision. The Director in charge of ICT procurement, installation and maintenance argued that, "*Institutional repository, according to what you said is one of the ways the university library provides information for its users. Going into IR innovation may mean that other important ICT facilities we hope to provide for other units may need to be jettisoned."* The Director of the ICT unit in charge of training claimed that, "*the library is independent when it comes to training users on the use of ICT facilities in the library. So if they need to implement institutional repository they need to convince the Director in charge of procurement."* This portends that the ICT

projects the university will embark upon are only those that the ICT heads deem important, suggesting that other stakeholders are side-lined when it comes to determining ICT projects that may be useful to the university. This condition is one of the ways the university exhibited uncoordinated crave for ICT innovation.

Multiple (and Conflicting) Sources of IR Awareness

Another factor that comes to bear in IR innovation in the case universities as a result of globalization trends is multiple sources of IR awareness. This occurs when stakeholders derive their awareness of IR innovation from diverse sources of information, most of which provide conflicting and inadequate ideas about IR innovation. Findings show that academics, librarians, administrators and IT staff gain information about IR from local and international information sources, conferences, seminars, workshops and lived experiences. In each case, ideas derived from these sources were inadequate to represent the wide range of issues that constitute IR innovation. For instance, a professor in University II said, "*I got to know about institutional repository [in the university] where I worked before I got a job here.*" Another academic staff in University II reported, "*I heard about institutional repository in a workshop I attended abroad on writing proposals for grants.*" An academic staff in University III who participated in a fellowship program in a university in South Africa shared that she "*used institutional repository at [the university] where I had my post-doctoral fellowship.*" Another academic staff who had his sabbatical leave in the US indicates that "*…in the US you have a lot of opportunities to write and present seminars, papers and workshops. All your academic outputs are expected to be put in the institutional repository.*"

The situation in University I is similar to the experiences narrated above. The Dean of Law in University I reveals that she heard about institutional repository "*…when an agency I was applying for research funds asked if my university has one.*" A librarian in University I claims that "*I got to know about institutional repository when I served as a respondent in a study done by a student from [a neighbouring university].*" In University II, a librarian indicated that he learned about IR by "*reading things written about it online.*" In University I, a librarian claimed, "*I first heard about IR from my husband.*" and another librarian said, "*…I have read a lot of journal articles on IR, because I wrote my project [M.A: Masters' Thesis] on it.*"

In the case universities, there appears to be a variety of sources from which research subjects derived IR innovation awareness. These sources exist as a result of current globalization trends that make sharing information through the Internet, the movement of people across international boundaries, and easier access to further training possible. This scenario however, promoted some challenges that led to the existence of conflicting and inadequate IR innovation ideas in the case universities. The ideas were conflicting because they were derived from a variety of sources that did not provide comprehensive and contextual information that are helpful for IR innovation in the case universities. A stakeholder seemed to have his/her own idea of IR innovation that was differentiated by the source(s) through which s/he derived the idea. Most popular of these sources are casual discussions in informal settings such as homes and in formal settings such as meetings, conferences and workshops. For instance, University III has a functional IR the effectiveness of which was hampered by the diversity in sources of IR awareness. The differences in the ways academics, librarians and ICT staff assumed that IR should be used resulted in conflicts that affected the extent to which IR was actually used. The Director of the ICT unit in University III claims that "*…we have discussed this severally in meetings that IR is a technology we must use to propel our image to the world. I still can't figure out why people are not keen on its use.*" Invariably, those in attendance in the meetings he was making reference to are members of the university's management. His expectation was that directives given by the university management about the use of IR will translate automatically to IR use among members of the university's community.

In University III, some academics who have had experiences of depositing their papers in IR while undertaking fellowships and sabbaticals promoted the notion that the university's IR should provide a platform that enables users to make direct deposits from the convenience of their offices. However, the ICT unit was concerned with the need to avert copyright violation which could result from direct deposits. These conflicting ideas between academics and ICT staff about the methods of making paper submissions to IR was another factor that impeded IR innovation. In University I, the differences in the ways academic librarians view IR stalemated University I's drive to innovate IR. While the head librarian's IR innovation experience was gained in the UK, the librarian he put

in charge of IR gained his own experience from reading a variety of research articles on IR innovation as a postgraduate student in a Nigerian university. Another librarian in the university got her awareness about IR from her husband. The ensuing conflict of ideas resulted in stalled IR innovation in the university. In University II, diverse ideas acquired from different sources of IR awareness failed to show the university management the benefits of IR innovation in promoting its ICT innovation vision. A good example is the conflicting ideas held by librarians about the resources required for IR innovation. The head librarian in University II felt that IR innovation costs "*...a lot of money*" having read in an international mail list-serve of librarians that IR innovation requires the installation of server, software, mail server and Internet connectivity that will enable users to upload and download resources from it. Hence, anytime librarians try to propose IR innovation to him he concludes that the university cannot afford it. It follows that the head librarian did not put into consideration the fact that the university already possessed servers, mail servers and a majority of the hardware required to support IR innovation. The situation was compounded by the conflicting ideas held among librarians about what IR innovation entails. Although most of them knew that IR is meant to disseminate scholarly works, they had conflicting ideas about how to innovate IR without incurring unbearable cost, copyright violation and deposition of low quality resources.

One of the librarians argues that "*...we may need to wait until we have more PhD students because you have to put good resources, especially those produced by PhD students.*" This particular librarian held the idea that IR is meant primarily to disseminate theses and dissertations produced by postgraduate students. Her ideas are aligned with the electronic thesis and dissertation model of IR innovation. Another librarian in the university contends that "*From what I see on the net and what I have read about institutional repository, we need a separate place in the library from where we can receive deposits, put servers and where staff in charge can sit and work."* The issue of library servers and separate location for IR emanates from the belief that users must come in person to the library to deposit their work in a separate server dedicated to IR innovation. The idea of separate room and server for IR purposes is likely to have evolved because of conflicts about whether the library or the ICT unit should be in charge

of IR innovation. It mirrors the constant conflict between librarians and ICT staff about who is to be in charge of IR innovation.

Inadequate IR Innovation Success Factors

The conceptualization of IR innovation success factors by the case universities can influence the success of IR innovation. In University I, the librarian put in charge of IR innovation posited that universities gain global visibility through IR innovation. According to him, IR innovation "*is the only way of letting the world to see what is coming out of your institution…"* His expectations of the benefits of IR innovation are similar to those held by a librarian in University III who opined that IR "*will help to preserve the intellectual property and to advertise the university."* Most of the ideas regarding the benefits of IR innovation were propagated in the West in the early 2000s when IR was first invented with the aim to promote IR innovation. It was necessary to show stakeholders that commercial publishers as moderators of scholar publishing have undermined global visibility of scholars and their publications, and universities.

Among senior members of the case universities, the most commonly identifed benefit of adopting IR innovation was to gain reputation through good performance in webometric ranking. The ICT head in University III stated, "*…we hope that our institutional repository will help us to be listed in the first one hundred African universities in webometric ranking.*" In University II, a librarian also reiterated the idea that IR innovation could help the university become a globally recognized university through webometric ranking. He was of the opinion that, "*if we can work on institutional repository to the point where we can be listed in the first one hundred universities it can help us gain global reputation."* The culture of viewing the benefits of IR innovation from the standpoint of the continental and global visibility of universities also exists among academics. For instance, in University II, an academic who previously worked in a university that has innovated IR commented that, "*[the] university [where he had previously worked] is popular because it has institutional repository. It was ranked among the first one hundred universities in Africa."* In University I, one academic staff member held the opinion that IR innovation raises their profile and said, "*we want our work to be cited. This is capable of making a lecturer get collaborators for his research anywhere in the world.*" For those academics that are familiar with IR innovation, the

benefits of IR culminate in its ability to promote the global visitibility of scholars through their publications.

The IR success factors identified by research subjects are limited to visibility of academics and universities. They did not consider the importance of creating access to local research for the promotion of local socio-economic and political development. This is despite the impact of limited access to scientific knowledge on the development of the country. They also did not consider the benefits of IR innovation from the standpoint of eradicating the knowledge divide between the university and the rest of the developing society by connecting local knowledge needs and global scholarly knowledge output. None of the research subjects aligned IR innovation benefits to its ability to make local scientific knowledge available to stakeholders and development agents. One reason underlying the research subjects' explanation of IR innovation success factors is the conceptualization of IR innovation benefits from ideas developed in the West. Most times, their assumptions are based on satisfying performance issues that are identified by early promoters of IR innovation in the West. The implication of this is that IR innovation has not been intentially adopted as a strategy to promote development in Nigeria.

Transformation of Universities

New Managerialism

The transformations that universities experience across the globe were also experienced by the case universities. Surprisingly, some aspects of the transformations constitute barriers to IR innovation. For instance, University III, which is a publicly-owned university, has experienced a fair share of the effects of new managerialism on its IR innovation. The university embarked upon most of its ICT projects because it wanted to meet the high performance bar set by the Federal Government of Nigeria for federal government-owned universities. The Director of ICT unit in the university notes that, "*we needed to justify to government that we can run a contemporary university that is ICT driven.*" The Director of Academic Planning in the university corroborates this claim. He notes, "*for your budget to speak about what you are doing that is contemporary, you have to include projects that are connected to what is expected of a contemporary*

university." This implies that the university associates the innovation of ICT for management and administration as a marker of a contemporary university. Furthermore, public universities in Nigeria are experiencing more challenges in governance over time despite their clamour for autonomy from government. University III had to accommodate government interference in its administration and management as a way to show the government that it is taking its orientation compared to global contemporary universities seriously. The primary way new managerialism was projected in University III was through adoption of ICT based management and administrative styles. Most of its operations are being automated using globally popular software.

Another issue is the reduction in the government subvention to public universities and in effect, University III. Reducing funding support from central government was intended to encourage universities to adopt a business model of management and to initiate revenue-generating programs, in accordance with the operational principles of the new managerialism. Good examples are fee-charges for the use of ICT based services like access to Internet, computer laboratory, library, among others. An academic staff in University III reveals, "*We are charged every month for the Internet we use in our offices.*" In University I, the head librarian reveals, "*we charge our students some fees for the computer laboratories that are made available to them.*" The Dean of Sciences in University I also indicates that, "*[w]e charge our students other fees apart from the tuition fee they pay…we charge laboratory fees, practical fees and fees for using technology."* In relationship with these claims, an academic staff in University I comments on the authors' fee charged by the journal published by her faculty saying, "*…we pay authors' fee to publish in the faculty's journal.*"

New managerialism also plays a determinant role in the project(s) undertaken by University I and University II, both being privately owned universities. It follows that the ICT units in those universities assess ICT projects with the intention to see whether they provide room for usage fee-charges. According to the new managerialist ethic guiding managerial thinking, an ICT project (think: IR) that does not give room for usage fee-charges has a slim likelihood to be recommended to management for implementation. As the ICT Director in charge of training in University II said, "*the library handles its own ICT needs*." given that, apart from a library registration fee, all ICT based services

provided by the library are technically free, given that the library charges library registration fees. Hence, a project such as IR innovation, which he sees as a library service offering, may not be used to generate funds. University I favours ICT innovation projects that are likely to generate funds and those that can be used to meet NUC accreditation requirements. New managerialism impacts IR innovation in both University I and University II by invoking cost-benefit rules; it promotes the commercialization of services in the case universities. Given that IR does not lend itself to commercialization, its innovation was hampered in the case universities. The support given to IR innovation by key stakeholders, e.g. proprietor in University I, heads of ICT in University II and university management in University III, are determined by commercial values placed, either directly or indirectly, on IR innovation. This greatly determined IR innovation in the case universities.

Cost of Running Contemporary Universities and (the consequent) Funding Issues

The decision to reduce government subventions to universities and to encourage them to commercialize their services was expected to improve on the funds available to universities. This, however, is not so, given the nature of contemporary universities. In Nigeria, where the case universities are situated, stakeholders expect that publicly owned universities will ameliorate their funding challenges by adopting an orientation towards commercialization. The findings of this study show that this was not achieved. According to the cost-benefit/profit-loss operational protocols of the new managerialism, issues concerning funding and operational costs of running contemporary universities are a fundamental IR innovation barrier factor. University III, as a publicly owned university, is expected to meet its funding needs and cost of operations through a combination of annual subvention provided by the government and internally generated revenues. University I and University II, being privately owned universities that do not get funding support from the government, are expected to use their right to charge tuition fees and service charges to generate the funds they need to meet their needs. This is coupled with their right to commercialize and source funds from every legal source. These strategies, however, did not solve much of the challenges the two universities faced with regards to their gross funding and operational costs. Inadequate funds and

high operational costs were found to be among the major factors that negatively impact IR innovation within the parameters of the new mangerialism.

Being privately owned universities, University I and University II have the leverage to charge tuition fees. However, the two universities did not reach the number of students they needed to admit in order to break-even financially. University I, for instance, had about two thousand undergraduate students at the time this research study was conducted. University II had less than two thousand five hundred undergraduate students and about ninety postgraduate students at the time this study was carried out. These numbers are not comparable to over six thousand students admitted into University III, which is publicly owned and offers free tuition. Therefore, while University I and University II could charge tuition fees, the number of registered students determine their revenue and the funds available to cover their operational costs. Students and prospective students considered the amount charged as tuition fee too high. University I and University II would have wanted to increase the tuition fees they charge to increase their revenues, but are forced to balance those expectations in relation to the ability of their students to pay their fees. Market forces, therefore, determine how tuition fees are set by privately owned universities.

The two universities have to provide ICT in order to make them competitive in the market irrespective of the conditions that affect their ability to generate funds through tuition fees. Unlike in University III where students could seek admission without prior assessment of the quality of facilities, parents/guardians and prospective students walk into University I and University II to assess the quality of facilities. They want to compare facilities and justify to themselves the tuition fees charged by the universities. The Dean of Sciences in University I said, "*Most times parents call in to assess our laboratories, class rooms and other facilities before paying acceptance fees.*" The Dean of Humanities in University II also noted, "*During the period of admission we ensure that we put in place plans to help parents and students see what we have on ground. We call and try to convince those who can't come that we are able to provide good education.*" Two academic staff members of University II said that "*[they] are encouraged to do students' admission drive"* and "[t]*here are incentives for you here if you help bring in students for admission."* Issues such as these do not come up in

University III because it has large numbers of registered students due to the low fees. Being a publicly owned university, cost of schooling is subsidized by the FGN.

The case universities have challenges with the high cost of operations. This is because they are required to provide power supply, library materials, laboratory and ICT facilities, and conducive learning and working environments. The Director of Academic Planning in University II concludes that "*In terms of cost required to stay alive, it is a huge challenge.*" In University I, the head librarian notes that "*funding is a major challenge here. Go to majority of the private universities, the major challenge is funding.*" In University III, an academic staff lamented that "*funding is working against research activities in this university. I tell you, to get good papers to put online is terribly difficult because available funds are too low.*" These issues also affect IR innovation in the case universities. While they may consider IR innovation important, the issues they face with funding and running costs trivialize the need for IR innovation. Consequently, IR innovation did not fall into any of the needs that major stakeholders consider when deciding on projects to embark on to improve on the quality of the case universities.

Conditions of University Libraries

Staffing Issues

One area of this study that had surprising findings is the operational state of the case universities' libraries. While universities, globally, experienced dramatic transformations in libraries and information services delivery in the post-World War II era, similar observations were not visible in the case universities. Contemporary university libraries are known to be big. They provide access to a variety of information resources that are mainly in digital formats. They also employ different categories of staff, namely, academic librarians, paraprofessional librarians, administrative and secretariat staff, IT professionals and clerical staff to manage contemporary demands. Disappointingly, despite the fact that the case universities' libraries are projected as contemporary university libraries, they are poorly staffed. Poor staffing impacted their capacity to promote IR innovation. For instance, University I has only nine academic librarians, two paraprofessional librarians and no IT, secretariat and clerical staff. Given that there were no secretariat staff, the head librarian expected one of the paraprofessional librarians to

provide secretarial services. This resulted in a situation where only one paraprofessional was available to support the few available academic librarians in the delivery of library and information services. The university IT staff occasionally attend to the library and is not answerable to any staff of the university library. As a result, urgent IT needs are delayed until an IT staff member is available to work in the library.

In University II, there are ten academic librarians, three paraprofessional librarians, one secretariat staff and one clerical staff. The secretariat staff and the clerical staff are deployed to work with the head librarian given the enormous administrative responsibilities of his office. The IT staff that works in the university library is also a staff of the IT unit. Although he is permanently stationed in the university library, he is not officially answerable to staff of the university library. In University III, there are fifteen academic librarians, eight paraprofessionals, four secretariat staff and three clerical staff. One of the paraprofessional librarians was designated ICT librarian and works in the university library's virtual library. Observations show that the number of staff available to the case universities impact library information services delivery and IR innovation. This is more so when comparing the number of staff to the information delivery services outlined in their websites. Staffing issues persisted in the case universities' libraries despite the fact that the head librarians in the libraries are aware of how they impact the delivery of library information services. The head librarian described the experiences in University III thus: "*We have the mandate to provide about thirty thousand volumes of books and seven thousand titles of journals by the time the university is five years old.*" He further noted that "*…at ten years, we are expected to provide one hundred thousand volumes of books and twenty-five thousand journal titles.*" He however, noted that "*staffing is one of the challenges we are facing. To provide such number of books do not only require money, it also requires making staff available to handle the acquisitions, processing and management of the resources.*" In University I, the volume of books in the library was about forty thousand. About ten thousand of the books however, were yet to be processed and as a result, were put on shelves for users without classification marks. This has enormous effects on users' accessibility to books in the library given that those not processed do not have retrieval records in the library's catalogue.

Apart from problems associated with processing books, inadequate staff also affects the operations of faculty libraries. Faculty libraries were established to bring library services closer to users. In University I, the nine academic librarians have their offices in the main library complex, however, three of them are expected to work in three faculty libraries on Tuesdays and Thursdays. This means that they are to leave their primary official duties on these days to take up the responsibility of managing faculty libraries. Their major responsibilities in the faculty libraries include the processing of books through cataloguing and classification, and developing records that are to be used for electronic cataloging in the future. Consequently, students do not have official permission to use faculty libraries as the resources are still being processed. One of the academic librarians who work in one of the faculty libraries argues, "*I can't allow students to use this place. I refer them to the main library. As you can see, this place is not ready at all. If students are allowed in here half of the books will be stolen…I can't be working on books and be concerned about those who come in and go out of the library.*" One other academic librarian complains that "*…with the number of staff we have at our disposal, the idea of opening a faculty library that is ran by one academic librarian is absurd. I never supported it. The University Librarian wanted it…*" The third academic librarian linked insufficient library staff to IR innovation. She argues, "*You see what I was trying to say when you [the researcher] were talking about IR innovation and the role we as academic librarians are expected to play. It is difficult for one to combine all I do in the main library and the Faculty of Science Library with IR innovation.*"

In true sense, all the academic librarians who are expected to take up a primary role in IR innovation are very busy with other library information service related responsibilities. One academic librarian was put in charge IR innovation in University I even though it is clear that an individual cannot handle the full range of activities connected to IR innovation. Staffing situations in the case universities' libraries stand as one of the many barrier factors that hamper IR innovation.

Book Gift Culture

Another obstacle to IR innovation in the case universities is the entrenched book gift culture. Historically, the 1980s and 1990s witnessed a dramatic transformation in library information service delivery in Europe, the US and Canada. Changing library resources

from print to digital in these regions affected the culture of library acquisitions in developing countries, including Nigeria. The book gifts received by university libraries in developing countries from individuals, organizations and governments in the West increased as they replaced their print resources with digital formats. The era of digitalization of library information within universities in the West was perceived as a momentary growth opportunity for Nigerian universities. The Nigerian universities mounted acquisition programs directed at receiving book gifts from Europe, the US and Canada. Unfortunately, this momentary opportunity for library development evolved into a permanent organizational culture which embraced book gifts as the primary method of book acquisition in Nigerian university libraries. The administrators of Nigerian universities reduced the money allocated to university libraries for the acquisition of library resources. The head librarian in University II alludes to this culture across universities in Nigeria. "*I started my librarianship career in [one of the first generation universities in Nigeria]. In the 1960s, we use to have money for acquisitions we can't even exhaust, but now all over the country every librarian complains about no money and the culture of relying on gift.*" This also culminated in the culture in which libraries are established using book gifts received from foreign donors. In University I, for instance, the academic librarian in charge of acquisitions noted that "*…we received about fifteen thousand volumes of books at inception of the library from the proprietor's friends and well-wishers in Nigeria and abroad.*" This was corroborated by the head librarian who said, "*Our collection is made up seventy-five percent gifts. I am sure you know that this is not healthy. Unfortunately for us, the proprietor still goes around soliciting for gifts for the library. So when you demand for money to buy relevant books he simply says that the university is expecting some gifts from god-knows-where.*"

In University II, the head librarian reveals that "*Most books in our collection, particularly those that we used to set up the library, are gifts from members of the church.*" The librarian in charge of book acquisitions complained, "*I can't remember the time I purchased books last. Every book I process in this unit in the past five years is gift.*" This scenario is similar to the situation in University III. While the head librarian tried to curtail the influx of book gifts into the library, the vice chancellor directly solicits and receives gifts from donors. The head librarian complains that "*...the vice chancellor*

now goes ahead to receive gifts on behalf of the university and the library. Since he is the boss, I can't stop him. Unfortunately, he is creating a culture that other older universities are struggling to discard." The reflections of the head librarian reveals the negative effects book gifts have on university libraries in Nigeria. The seeming benefits the case universities derive from these gifts reinforces an unhealthy acquisitions culture in Nigerian university libraries. It impacts the extent to which the universities are ready to adopt digital information delivery systems given that donors offer print rather than digital resources as gifts.

The book gift culture influences the case universities disposition towards providing funds for their libraries. Administrators see libraries as units that can be sufficiently resourced through gifts. Expending resources on IR innovation was, therefore, not considered necessary given the entrenched book gift culture. Consequently, the case universities' libraries are dissatisfied with the amount of money made available to them to support contemporary library information services, including IR innovation. Instead, administrators promote the notion that the case universities' libraries should seek gifts as a way to develop digital collection. An academic librarian in University I noted that, "*Institutional repository is ICT based and you need to deploy computer and the Internet everywhere in the University if you want it to succeed. The question is how you are going to do this if management did not provide funds for all the tools required.*" Another academic librarian in University I further describes the impact of the book gift culture on IR innovation as follows: "*Most professors here don't believe in digital resources. The vice chancellor is also guilty of this. If they can't touch the books or see them on the shelves they don't believe that you have something…they are not digital content compliant yet. How will they now support IR innovation?*"

Hierarchical Organizational Structure

A major factor that determines the internal functioning of organizations, including university libraries, is the organizational structure that they adopt. In most cases, organizations adopt either flat or hierarchical structure. There are also a number of organizations that adopt hybrid organizational structure, a combination of both flat and hierarchical organizational structures. Organizational structures determine the ways organizational actors relate with one another while completing organizational tasks.

Authority, power, work processes and structures, supervision and communication lines are determined by organizational structures. In most cases, the input, processing and output model of organizations are also determined by their organizational structures. The ways IR innovation was enacted in the case universities was, therefore, influenced by organizational structure. IR innovation was evaluated vis-à-vis the case universities' organizational structures to see how they facilitate or constrain the internal functioning enacted in the library during IR innovation. For instance, the organizational structure of a case university' library determines the extent to which staff communicate with one another about IR innovation. It also determines how they handle issues coming from other departments outside of the library.

Organizations normally engage in both formal and informal communication when engaged in technology innovation. The organizational structures of the case universities did not promote horizontal communication required to facilitate interdepartmental communication during IR innovation. This is because their organizational structure is hierarchical. In University I, for instance, the librarian put in charge of IR innovation did not communicate about IR innovation plans with academic librarians in other departments and units. Instead, he reports all issues concerning IR innovation directly to the head librarian as a result of the dictates of the university's hierarchical organization structure. In University II, the claim was that the university library adopts a hierarchical organizational structure. As a result, information about IR innovation from the library IT personnel is forwarded to the university's technical division head and not to its head librarian directly. Given that the library's hierarchical organizational structure requires the IT personnel to send all information through the head of technical division, the head of technical division used his power to filter the information that reaches the head librarian without regard to its importance. The IT personnel complains during an interview session saying that "…*things I propose never get to the top. I am not directly employed to work in the library. I was posted here from the IT, so they rarely give me a voice."* While his status may be one of the reasons why his ideas do not reach the head librarian, the organizational structure adopted by the library further exacerbates the disconnect.

In University III, IR usage was being supervised, so to say, by the head of technical services. Although IR innovation is entirely handled by the IT unit, the head of technical unit attends to the IT unit on issues relating to IR innovation that concerns the university library. The IT unit, however, prefers to deal with the paraprofessional librarian who is in charge of the virtual library because of the attitude of the head of technical services to IR innovation. Conflicts, therefore, arise between the paraprofessional librarian and the head of technical services because she serves as his immediate supervisor. The assumptions derived from a hierarchical organizational structure require that every communication concerning IR innovation should go to the head of technical services. The head of technical services sees direct communication between the IT unit and the paraprofessional in charge of the virtual library as an abuse of communication structure. Consequently, information provided, concerning IR, by the paraprofessional (originating from the ICT unit) rarely gets to the head librarian. The head technical unit argues that "*institutional repository innovation is a formal business…the IT handles it in the university. They, however, need to know that there are formal structures to be followed when trying to communicate about it to us."* On the other hand, the paraprofessional librarian complains, "*the fact that I have to communicate through somebody about what is going on with IR is a big problem to me and the system."* Examples in the case universities show how bottom-up IR innovation communication was hampered by organizational structure. Superior officers used their power and position to subvert efforts made by subordinate officers even if such efforts have the potential to positively impact IR innovation.

3.8 Theoretical Elaboration of Study 1 Research Findings

3.8.1 Uncoordinated Crave for ICT Innovation

According to Albrow & King (1990), globalization is tied to international flow of economic resources, ideas and culture. It is believed that globalization evolved because of the advances in means of transportation and telecommunications. Advances in transportation enabled people to move from one location to another with ease, notwithstanding the distance. Advances in telecommunication led to the invention of telegram, the Internet and mobile technologies. These radically transformed the

communication of events and ideas across local and international boundaries. Although globalization is viewed primarily from economic and political perspectives, its impact on the socio-cultural well-being of societies cannot be over emphasized. Giddens (1991) argues that globalization intensifies "social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa (p. 4)." It is believed that globalization shrinks world societies in ways that make them assumedly one. Although there are critiques of the globalization trends currently taking place across the globe (e.g. Fiss & Hirsch, 2005), Steger (2009) proposes five dimensions of globalization, namely, economic, political, cultural, ecological and ideological globalization. Extant literature is dominated by studies that look into economic globalization. Although, studies into other dimensions of globalization are increasing, ideological globalization remains understudied. This is despite the fact that other dimensions of globalization, for instance, political globalization, is impacted by the political ideologies that emanate from different parts of the globe. Norms, beliefs, values, claims and narratives from societies that are believed to have superior ideologies about human and natural phenomena have continued to shape change trends in societies across the globe (Steger, 2009; Giddens, 1991).

For example, the crave to innovate ICT based management and administrative systems in universities in developing countries can be ascribed to ideological globalization. The level of proficiency and success of universities in developed countries that adopted the use of ICT based management and administrative systems was ascribed to the use of ICT (Nielsen, 2014; European Commission, 2005). As a result, universities that aspire to reach the kind of proficiency and success of these universities imbibe ideologies that imply compulsory ICT innovation (Erinosho, 2013/2014; Avgerou, 2010; Okebukola, 2009). Such events have been of interest to the main stream IS discipline, and has inspired IS studies that are based on technology adoption and diffusion (Zaman & Fielt, 2016; Mustonen-Ollila & Lyytinen, 2003; King, *et al.*, 1994). Given that issues concerning the role of ideological globalization in IS adoption and diffusion seems to be more applicable to developing countries, the ISDC discipline has done a lot to evaluate technology adoption and diffusion in developing countries (Sahay & Mukherjee, 2015; Avgerou, 2010; Heeks, 2009). Surprisingly, ISDC scholars that studied IS adoption and

diffusion did not identify the crave for IS by developing countries as a problem. This study shows how the drive for ICT innovation could degenerate to uncoordinated crave. ISDC scholars that studied IS adoption and diffusion focused on how developing countries innovate IS without considering local factors that may come to bear during IS innovation (Avgerou & Walsham, 2017; Bailey & Ngwenyama, 2016; Avgerou, 2008; Walsham & Sahay, 2006). This study identifies the crave for ICT innovation by the case universities triggered by ideological globalization as a problem. The case universities want to innovate with ICT because they have been made to think that it has become fashionable across the globe to do so. Ideological globalization promoted the pressures that made their craving degenerate into uncoordinated craving for ICT innovation leading to universities unknowingly creating more problems for themselves.

By outlining ICT innovation plans that outpaced their financial means to realize, the case universities created more problems for themselves. This indicates that IS innovation in organizations in developing countries, like the case universities in this study, is harmed when organizations do not critically assess their ICT innovation needs. Given the above, universities and other organizations in developing countries, need to develop appropriate parameters for the determination of their ICT innovation needs. Failure to do so can result in the inefficient usage of ICT infrastructure. One theory that this phenomena points to that has not been adequately explored in the IS discipline is the phenomenology of everyday life theory. The uncoordinated craving for ICT innovation in the case universities shows the influence of contemporaries on the socially constructed everyday life realities of consociates (Zhao, 2006; Schutz & Luckmann, 1989). Different local and international organizations indirectly determined how the case universities ended up having uncoordinated craving for ICT innovation that negatively impacted IR innovation. In the ISDC discipline, there is a growing tradition to assess the influence of individuals and organizations outside the organizations that are involved in IS innovation on IS innovation (Sahay & Mukherjee, 2015; Neilsen, *et al.* 2014; Jensen, *et al.*, 2009). The phenomenology of everyday life theory presents with the possibility of categorising individuals and organizations that impact IS innovation into four distinct social actors-consociates, contemporaries, predecessor and successors (Zhao, 2004, Schutz & Luckmann, 1989; 1973). It has the potential to help scholars identify and describe the

sources and genesis of social ideologies that determine the outcomes of IS innovation. IS studies that do not provide information about the sources and genesis of ideologies used to determine IS innovation promote the notion that organizations are closed systems (e.g. Ngwenyama & Nielsen, 2014; Effah & Abbeyquaue, 2013; Wilson & Howcroft, 2002). Organizations in developing countries are unable to accurately determine their ICT innovation needs because they do not sufficiently engage relevant stakeholders in their ICT needs assessment processes. This results in craving for IS that are not directly useful to stakeholders and eventually fail to meet expectations (Sahay & Mukherjee, 2015). It is necessary for IS scholars to intensify their efforts to identify how stakeholders within and outside organizations determine IS innovation outcomes. Furthermore, it is necessary to assess the sources of pressures that drive organizations into uncoordinated craving for IS innovation that, in turn, becomes a fundamental IS innovation barrier factor. This conclusion is based on knowledge gained from published academic literature on this subject matter and insights derived from this study:

> *Proposition I: The uncoordinated crave for ICT innovation is likely to constitute an IR innovation barrier factor in Nigerian universities.*

3.8.2 Multiple (and Conflicting) Sources of IR Awareness

Observations in the research contexts confirm that ideological dimension of globalization has not been thoroughly evaluated in the extant literature, and particularly in the IS discipline. For instance, this study reveals that research subjects had different IR innovation ideas. This is primarily because they derived their IR innovation awareness from multiple and conflicting sources which degenerated into idea overload. Idea overload occurs when research subjects have a variety of IR innovation ideas as a result of their access to diverse information sources. In the IS discipline, studies that address dissensions in IS innovation ideas draw their background arguments from related social science theories that focus on culture, communication and social structure (Sahay & Mukherjee, 2015; Ngwenyama & Nielsen, 2014; Light & Howcroft, 2010; Lamb & Kling, 2003). These studies, however, did not fully look into how globalization trends promote access to multiple and conflicting ideas which lead to idea overload. This is despite the fact that the discipline of information overload indirectly points to

globalization trends as the promoters of information overload (Levitin, 2014; Edmunds & Morris, 2000). In this study, I define the term idea overload differently from how scholars define information overload. While information overload deals with information as a material that could come in multiple forms and become burdensome, scholars that propagated it neglect the end product of information. My argument is that the ideas that result from the consumption of information that was obtained from different sources were not given consideration (e.g. Metzger, 2007; Flanagin & Metzger, 2000). This study aimed to bridge this gap and, therefore, resulted in the emergence of the concept of idea overload.

When people consume information, the end products of such consumption are ideas that one can also categorize in some ways as knowledge. The more information consumed about a given phenomenon, the more the ideas that one may develop about the phenomenon. Differences in the sources of information consumed also results in differences in the ideas that are developed in the minds of the consumers. This study revealed that people could informally consume diverse information about IR innovation and form ideas about IR innovation. Disappointingly, the ample attention IS scholars pay on the social aspects of IS innovation has not resulted to the full exploration of how information consumed both formally and informally as a result of globalization trends lead to multiple and conflicting IS innovation ideas. See for instance, these limitations in the following IS studies (Kudaravalli, *et al.*, 2017*;* Sahay & Mukherjee, 2015; Lyttinen & Newman, 2008; Braa, *et al.*, 2007a**)**. This issue is compounded by IS scholars' failure to categorize the social actors that promote ideas that influence IS innovation. For instance, in this study, a librarian was influenced by her husband. Others were influenced by the ideas they acquired from professional mail-list-service and through informal face-to-face discussions with different categories of people, among other ways. This raises questions about the kind of social actors that influenced the ideas that were used to determine IR innovation in the case universities and reveal the possibility of idea overload. Questions also arise relating to the relevance of assessing how consociates, contemporaries, predecessors or successors determine the kinds of IS innovation ideas that are likely to emanate from different social groups. Another question of interest is the socio-physical location of those that propagate the ideas that determine IR innovation in the case

universities. Zhao (2006) was devoted to explaining the emergence of a category of consociates as a result of the technology enabled social interactions. The implication of this has not been fully incorporated into IS studies that tried to assess the array of social actors and social mechanisms that determine social influences on IS innovation (e.g. Bailey & Ngwenyama, 2013; Avgerou, 2013; Braa, *et al.*, 2007b). Apart from this, IS scholars have also not fully considered the array of social contexts and groups that organizational actors belong to and how this determines the kinds of ideas they have about IS innovation. Existing studies contributed to the current understanding of the influence of stakeholders on IS innovation. However, they did not fully look at how stakeholders develop their awareness from multiple and conflicting sources that come to bear in their perception and meaning of IS innovation. Consequently, given the revelations in the extant literature and those identified in this study:

> *Proposition II: It is likely that IR innovation awareness derived from multiple and conflicting sources constitute IR innovation barrier factor in Nigerian universities.*

3.8.3 Inadequate IR innovation Success Factors

Invariably, every IS that is innovated by organizations is innovated as a result of some assumptions about what constitutes successful innovation (Lin, *et al.*, 2007; Changchit, *et al.*, 1998). The expected success factors are used by organizations to come up with ways to justify resources invested in IS innovation. Issues revolving around justifying resources committed to IS innovation with expected outcomes have become popular indices in the main stream IS scholarship and the ISDC (e.g. Bollou & Ngwenyama, 2007; Lin, *et al.*, 2007; Dada, 2006; DeLone & McLean, 2003). While these studies have contributed immensely to existing knowledge on the factors that drive successful IS innovation, the revelation derived in this study show that there is more to be learnt about how the justification of IS investment is conjectured. For example, particularly as proposed by Delone & McLean (2003), IS success factors are used to justify the resources committed to IS innovation. This is to say that IS scholars conceptualize assumed IS success factors as ends and not as means to ends (Andoh-Baidoo, 2017; DeLeon & McLean, 1992). The ways IR innovation success factors have been

conceptualized both in the literature (Utulu & Akadri, 2014; Shearer, 2013; 2003; Wyk & Mostert, 2011; Westell, 2006) and in practice as shown by the revelations derived from this study indicate that assumed benefits of IS can also constitute IS innovation barrier.

Observations in this study show that IR innovation benefit indicators used by the case universities are popular indicators that have been adopted across the globe. These indicators are informed by ideological globalization as those concerned have access to IR innovation benefit indicators set in other social contexts. I propose that the main IR innovation benefit that should be promoted in developing countries should be the distribution of scientific knowledge required for development. This is induced from revelations in the extant literature on the factors that motivated the evolution of IR and the implication of knowledge divide on the achievement of development initiatives in developing countries (Nwagwu, 2013; Lynch, 2003; Harnad, 2001). In the case universities, use of IR to eradicate knowledge divide and, in effect, promote development was not considered a factor for expected success indicator. Despite the fact that research subjects indicate that IR innovation promotes visibility and access to research, they did not directly link these success factors to using IR innovation to promote access to the scientific knowledge required for development. Because their notions about visibility and access were derived from the information they got outside of the context of developing countries (Lynch, 2003; Harnad, 2001; Giddens, 1991), they did not conjecture that IR innovation has the ability to promote the distribution of development information. Consequently, IR innovation success factors identified by the case universities are inadequate.

The success factors identified by case universities include visibility and popularity of academics and universities, good performance in webometric ranking, and possibility to win research grants and collaboration with international scholars (Zaid & Okiki, 2014; Ezema, 2013; Nwagwu, 2013). While these benefits are important, they are not adequate. The role of scientific knowledge in development and the need for adequate IR innovation success factors were not given enough consideration. The importance of these two factors is highlighted by findings from several studies that show the hampering effect of knowledge divide on socio-economic, political and environmental development of developing countries (e.g. Ngwenyama *et al.,* 2006; Ehikhamenor, 2003; Norbert &

Nsouli, 2003) and the role of universities and IR innovation in promoting development (Kruss, 2017; Utulu & Akadri, 2014; Nwagwu, 2013; Hansen & Lehmann, 2006; Kanbur, 2001). It is, therefore, logical to propose that IR innovation success factors should be oriented towards providing enhanced access to local scientific information that are needed to promote development.

This opens up the need to address the method by which universities determine IR innovation success factors that seem to be in conflict with the original reason for the invention of IR. Accounts of the rationale behind the invention of IR explain that failure of open access journals to fully serve the needs of authors, particularly those in developing countries, as a result of cost of publication, sparked the desire to ameliorate lack of access to scientific knowledge through IR (Lynch, 2003; Harnad, 2001). Given that research and development go hand-in-hand, IR was presumed to be a technology meant to promote development. Hence, visibility of authors, universities and research publications are taken to be requisites of development. It follows that social actors identified in the phenomenology of everyday life theory have played vital roles in identifying IR innovation success factors over the years. This opens up the importance of a wide range of assessments that are meant to expose the factors behind the success factors IS innovators propose during any project. This issue has not been fully addressed in both the main stream IS and ISDC literature. This study, however, reveals how different stakeholders-UN, UNESCO, World Bank, FGN and NUC- indirectly determined the benefits of IR innovation (visibility, prestige and good performance in webometric ranking) that case universities plan to achieve with IR innovation. Given the revelation in the extant literature and the revelation derived through this study:

> *Proposition III: Setting inadequate IR innovation success factors are likely to constitute IR barrier factor in Nigerian universities.*

3.8.4 Transformation of Universities

New Managerialism

Part of globalization trends that manifest in the five dimensions of globalization-economic, political, cultural, ecological and ideological- is the transformation of universities across the globe. One major indice of the transformation of universities

across the globe is new managerialism (Nielsen, 2014; Okebukola, 2006; European Commission, 2005). There is a deluge of documents about how European universities should transform to adopt new managerialism (e.g. European Commission, 2005). This is also the same in developing countries, including African countries (Akalu, 2014; Okebukola, 2006; CHREN, 1992). Changes proposed in these documents challenge traditional codes of conducts of universities by allowing universities to adopt management and administrative styles that were termed new managerialism because they were in the past assumed to only be applicable to for-profit organizations. In the past, universities assumed that they are to be managed exclusively and differently from other forms of organizations, particularly business organizations (Aronowitz, 2000; Barrow, 1990). These days, universities adopt management orientations that were in the past assumed to be exclusively for corporate business organizations (Nielsen, 2014; Okebukola, 2015). This has resulted in inclusive management and administration of universities where students, parents/guardians, funding agencies, professional associations and government actively participate in the formulation of policies whereas prior to the era of new managerialism, universities determined their management and administrative orientations for themselves as self-managing autonomous entities. (Akalu, 2014; Kruchen & Meier, 2006).

New managerialism suggests that universities as self-managing autonomous entities and governments will be the primary funding sources for the former's operational costs. (Nielsen, 2014). This funding formula is more applicable to privately owned universities, than public universities in the West, which by the very nature of their private ownership are self-funding (Okebukola, 2015; Osagie, 2009**)**. However, self-funding is also relevant to publicly owned universities in light of the reduction in financial resources made available to them by modern governments. Worthy of note is the change in the attitudes of modern governments towards funding universities and public education, and their adoption of the modern neoliberal approach to government where government is perceived as managerially inefficient, when not incompetent, in the conduct both its own affairs and those of private corporations, and are at their best when minimally invested in the conduct of public affairs previously assumed its domain. The new managerialism is a derivative of this brand of neoliberal politics: the ways and means of the private

corporation are the ways and means for the efficient functioning of government, universities and other organizations in society.

Many universities must devise new ways to augment their financial supports from government with internally generated funds (Mali, *et al.*, 2016; Akalu, 2014; Hudu, 2000). These conditions have resulted in the adoption of new management orientations among universities. These orientations include charging tuition fees based on cost-benefit analysis (Tilak, 2015; Ogbogu, 2011; Stein, 2004), increasing university-industry collaboration as a way to increase the possibility of funding support from industry (Nielsen, 2014; Markman, Siegel & Wright, 2008), tightening government control through accreditation and compliant policies (Ekpoh & Edet, 2017; Anugom, 2016; Akalu, 2014), and involving students and parents/guardians in the decision making processes of universities (Perkmann & Walsh, 2008; Okebukola, 2006; Stein, 2004; Buchanan & Devletoglou, 1971). These inclinations were visible in the case universities where tuition fee regimes were set based on cost-benefit considerations and were calculated to meet as high a proportion of the full cost of tuition as politically acceptable. The case universities also advertised their services similar to business organizations, aggressively pursued university-industry collaboration, and operated a decision making mechanism that included students, parents/guardians and industries. This points to the observation that stakeholders that determine what goes on in the case universities include consociates, contemporary and predecessors (Schutz & Luckmann, 1989).

Issues regarding the nature of organizations have been of concern to scholars. In the recent past, scholars who argued from the post modernism perspective stated that organizations do not have determinate existence (Thornton, *et al.*, 2012; Senge, 2006; Morgan, 1997; Blackler, 1992; Weick, 1983). Arguments in the extant literature and findings from this study have fundamental implications on the ways scholars inquire into IS phenomena in organizations. They shine a light on the fuzziness of organizations, and turn scholars' attention away from formal structures to everyday life realities that determine the meanings ascribed to IS innovation realities (Ngwenyama & Nielsen, 2014; 2003; Avgerou, 2013; Orlikowski, 2010; Lyttinen & Newman, 2008; Cibbora & Lanzara, 1994; Weick, 1983). Such attention turns the mind of scholars to the importance of both internal and external factors to IS innovation. It also helps to match events undertaken

during the scientific inquiry with insights proposed in the phenomenology of everyday life theory about likely social actors who influence IS innovation. In this study, key stakeholders were observed to use socio-economic, political and technological factors attached to the transformation of universities to determine the value of IR innovation. For instance, key stakeholders did not see IR innovation as a technology that could help the case universities to attain their ICT innovation goals because they called upon cost-benefits analysis to determine the ICT with which to innovate. Given this, the IS that supports fund generation were phased to be innovated ahead of those that may not be used to generate funds. This illustrates the extent to which the money-making propensities of the new managerialism and the social actors it accommodates determine IS innovation in organizations that implement it. Based on the information in the extant literature and the experiences gained in the empirical contexts of this study it is determined:

> *Proposition IV: Adoption of new managerialism is likely to constitute an IR innovation barrier factor within Nigerian universities.*

3.8.5 Cost of Running Contemporary Universities

As shown so far, the cost-benefit attitudinal orientation of the new managerialism has transformed university management systems across the globe both positively and negatively. The positive impact may be seen in how universities respond to contemporary challenges based on their financial impact on the university's "bottom line"; the negative impact can be seen in how the cost of running contemporary universities have increased as a result (Yonezawa & Shinmi, 2015; Ajadi, 2010; Akalu, 2014; Stein, 2004). The high cost of deploying technology based management and administrative systems are areas of financial challenges to contemporary universities (Altbach, 2015; 2013; Okebukola, 2015; Osagie, 2009). In the case universities, for example, the need to adopt contemporary management and administrative paradigms resulted in increases to the operational costs of universities. Although they reacted to this challenge by implementing their ICT innovation projects in phases and not all at once, the phasing strategy posed a barrier to IR innovation. The phasing-in of ICT innovation projects was implemented in accordance with the perceived business values of ICTs due to the need to

generate funds to meet running costs. Those ICT innovation projects that are expected to generate funds were phased-in ahead of those that may not support fund generation. It follows that the underlying driver behind ICT innovation plans in contemporary universities is the need to generate funds required to meet their increased operational costs. This observation has not been previously exposed due to stakeholders' assumptions that ICT innovation in contemporary universities promote the adoption of contemporary management and administration strategies in a value-neutral manner, that is, ICT innovation will only be of benefit and will not cause economic injury to the university. This revelation is important to IS innovators who seek to identify new IS innovation barrier factors.

In developing countries, the cost of IS innovation has been identified as a major barrier to IS innovation (Pietrobelli & Rabelloti, 2011; Heeks, 2002). For instance, in Heeks (2002), the cost of IS was identified as the major bane that leads to failed, incomplete or abandoned IS innovation projects. Other studies have also looked into the impact of cost on the final outcomes of IS innovation (Kijsanayotin, Pannarunothai & Speedie, 2009; Dada, 2006). These studies are warranted by the interest in discovering the direct impact of the cost of buying IS and innovating it on IS innovation outcomes. Since most IS are invented outside developing countries, the cost of foreign exchange, expertise and maintenance have been identified as major challenges to IS innovation in developing countries (Narula, 2014; Dasgupta, *et al.,* 1999). The situation identified in this study provides a unique example of the indirect effects of cost on IS innovation owing to lower IR innovation costs compared to the cost of most of the IS innovated in the case universities. Given that IR innovation is done with free open source software that can be downloaded online, one would expect, based on the literature on the role of cost in IS innovation, that the case universities will innovate IR ahead of more expensive IS. The advantages of free open source software in developing countries have been outlined in the extant literature **(**Effah &Abbeyquaue, 2013**)**. Scholars suggest that it is able to eradicate the problem of IS innovation in developing countries. The situations in the case universities, however, seem not to match this suggestion. The arguments put forward in the LIS discipline in favour of the ability of open sources software to eradicate the cost problem that impedes the adoption of automation systems in university libraries

in developing countries needs to be reassessed (e.g Ezema, 2013; Nok, 2006).

Findings in this study show that, even though it is logical to assume that free open source software is capable of solving IS innovation challenges in developing countries, there are other issues at play that overshadow this suggestion. The competing demand for ICT innovation in the case universities makes cost, in combination with other factors, a determinant of IR innovation. IR innovation cost was assessed vis-à-vis other technologies like servers, mail servers, cost of expanding Internet access to facilitate remote deposition and use. Decisions on whether IR should be innovated was, however, determined by key stakeholders' views on its signficance to generating funds to ameliorate the burden of university operational costs, thus highlighting the cost of running contemporary universities as an underlying barrier factor to IR innovation. The dominant focus on operational costs is consistent with the views espoused by key stakeholders about IR innovation as a viable venture to facilitate increased funding from potential donors. This view is consistent with the money making attitudinal compulsions of the new managerialism. The implication of this to both research and practice is that it turns the attention of scholars and practitioners to further social factors that may determine IS innovation. Scholars and practitioners should also put into consideration all possible social actors and their views when deciding on the factors that determine IS innovation. Based on insights derived in the extant literature and empirical situations in the case universities:

> *Proposition V: Cost of running universities in Nigeria (and other developing countries) is likely to constitute IR innovation barrier factor.*

3.8.6 Funding Issues

Although contemporary universities have reacted meaningfully to the challenges of cost-benefit transformation of universities due to new managerialism, funding-related issues still remain a great challenge. Universities in developing countries are constantly confronted with the issue of funding. The reduction in funding from governments means that universities are expected to take on sourcing for funds as part of their responsibilities (Guerroro, *et al.*, 2015; Okebukola, 2015; Phillips & Olson, 2015; Akalu, 2014; Erinosho, 2013/2014). Invariably, the issue of funds available to universities have been

mainly attributed to the reduction of government subventions (Etzkowitz & Zhou, 2017; Akalu, 2014). There are also social issues that deprive publicly owned universities from taking steps that would enable them to increase the funds they get through payments made by students and other stakeholders (Oyelaran-Oyeyinka & Adebowale, 2017; Eze, *et al.*, 2013; Amuwo, 2000). Unionism, market forces, general economic situation in a country and efforts made by universities to attract funds are among the factors that come to bear in the struggle by universities to handle the challenges of funds scarcity (Oyelaran-Oyeyinka & Adebowale, 2017; Okebukola, 2015; Odiagbe, 2012). Most commentators make reference to the role of the World Bank in the development of the situation (Erinosho, 2013/2014; Jones, 2007; European Commission, 2005; Psacharopoulous & Patrinos, 2002**)**.

Insights in the extant literature are limited to direct effects of scarcity of funds such as reduction in the ability of universities to provide conducive teaching and learning environment (Okuwa & Campbell, 2017; Chevers, *et al.,* 2016). Other consequences include inability to provide adequate ICT facilities to support teaching, learning, research, management, administration (Olatokun, 2017; Ehikhamenor, 2003), loss of morale and motivation among staff of universities (Bentley, *et al.*, 2013; Hudu, 2000). These challenges are profound in developing countries that face reduced government funding to universities due to shrinking annual education budgets (Tilak, 2015; Altbach, 2013). In the ISDC literature, the effects of funds scarcity on IS innovation in developing countries has been addressed from several perspectives. These include those studies that addressed the digital and knowledge divide and concluded that the major factor promoting them are funds scarcity (Arocena, *et al.*, 2015; Venkatesh & Sykes, 2013). The study corroborates insights in the extant literature on how insufficient funding results in failure and incomplete IS innovation. Furthermore, this study extends existing insights by showing how larger social issues result in funding issues that determine IR innovation. For instance, findings in this study highlight the impact of the fiscal/monetary condition of the national economy on government funding for education.

The rate of tuition fees charged by privately owned universities and the economic power of prospective students and actual students were also identified as factors that lead to funding challenges that, in turn, determine IR innovation. This is coupled with the

effect of trade unionism, government policies and political pressures from opposition parties that hinder universities from initiating new tuition fee regimes. This study finding implies that, in developing countries, a wide range of social issues in addition to poverty experienced by developing countries contribute to funding challenges that negatively impact IS innovation. It describes the influence of three categories of social actors, namely, consociates, contemporaries and successors, on funding in the case universities (Zhao, 2004; Schutz & Luckmann, 1989). Student and staff union activities are good examples of the role of consociates. Politicians' and governments' roles in projecting the fee regimes of publicly owned universities are a good example of the roles of contemporaries. Prospective students' decisions to enrol or not to enrol in privately owned universities due to tuition fee regimes show how successors can impact decision choices of organizations. These findings provide provide rationale for the need for scholars and practitioners to consider all possible social actors when working to identify possible factors that influence IS innovation. Given this reality and the realities contained in the extant literature:

> *Proposition VI: Funding issues are likely to constitute IR innovation barrier factors in universities in Nigeria (and other developing countries).*

The mainstream IS and ISDC disciplines are characterized by studies that assess IS innovation factors in large organizations. Large organizations have the added challenge of having units that could stand as independent organizations. For instance, in Ngwenyama & Nielsen (2014) and Iversen *et al.* (2004), the organizations assessed are those within large organizations. Universities are also large organizations that have various units that could stand as independent organizations. For instance, in this study, the case universities have various units that operate independently, despite the fact that they are controlled by a single central authority. University libraries are good examples of units in large organizations that may be independently studied. There is a sub-discipline in the LIS discipline that is devoted to studying university libraries (Wachira & Onyancha, 2016; Eze & Uzoigwe, 2013; Virkus & Metsar, 2004). Scholars in this sub-discipline risk taking for granted the influence of occurrences in the whole university on

the operations of university libraries and IS innovation within them. This study reveals how the book acquisitions culture that came to exist as a result of book gifts from foreign university libraries influenced IR innovation in the case universities. Although studies have previously shown the negative effects of book gifts culture on university libraries, the impact on IR innovation was not identified (Sturges, 2014; Edem, 2010; Buis, 1991). In the IR literature, particularly the genre that could be termed developing country genre, IR innovation barrier factors have not been linked to the book gift culture (Utulu & Akadri, 2014; Nwagwu, 2013; Wyk & Mostert, 2011; Ghosh & Das, 2007; Chan & Costa, 2005). In part, this is because the challenges associated with book gift culture were analyzed independently of the wider social contexts that triggered it, on the one hand. Additionally, LIS scholars that ventured to study the effects of book gifts culture on university libraries only evaluated it from the perspective of book acquisitions (Edem, 2010) and did not inquire into its effects on other aspects of library information services such as IR innovation. This revelation has strong implications on IS research that aim to assess IS innovation in organizations that are part of larger organizations. It shows the limitation of assessing organizations that are part of larger organizations independently of the occurrences in the large organization (Ngwenyama & Nielsen, 2014; Iversen, *et al.*, 2004). This study also makes clear how global occurrences may impact IS innovation in organizations (e.g., university libraries) that are part of larger organizations (e.g., universities) consequent to how the larger organizations relate to global occurrences. This study highlights a radical assumption made to-date about the validity of IS studies that did not consider larger contexts when assessing IS innovation factors (Light & Howcroft, 2010; Lyttinen & Newman, 2008; Orlikowski, 2006). It expands stakeholders' attention beyond institutional factors that are triggered by occurrences in local contexts (Badewi & Shehab, 2016; Keohane & Martin, 2014; Linderoth, 2014; Jensen, *et al.*, 2009). More compelling insights into IS innovation can be derived when IS scholars consider the impact of events in global, local and organizational contexts. Consequently, given the revelation derived in this study and insights in the extant literature:

> *Proposition VII: Book gift culture that emanates from globalization trends is likely to constitute IR innovation barrier to universities in Nigeria.*

One issue common to IS studies that assess staffing in IS innovation is that they only focus on factors within organizations. In fact, Yeoh & Popovic (2016) concluded their study by suggesting that "*...organizational factors play the most crucial role in determining the success of a BI system implementation. Hence, BI stakeholders should prioritize on the organizational dimension ahead of other factors* ***(p. 1)***." This conclusion negates the findings of this study about the relative role of insufficient staffing on IR innovation in the case universities. In IS research, studies on staffing in the successful implementation of IS are infrequent. Among scholars who have assessed the effect of staffing on IS innovation are Niederman, *et al.*, (1991), Harmon & Anderson (2003) and Xia & Lee (2005). The ISDC discipline also has scholars that have identified the impact of staffing on IS innovation in developing countries (Avgerou, 2010; 2008; Sahay & Walsham, 2006). Examples of a recent IS study that evaluated the role of staffing in IS innovation include Yeoh & Popovic (2016), Pham, *et al,* (2016) and Owusu, *et al.,* (2017).

Propositions about the impact of staffing on university libraries by scholars in the IS discipline are similar to those by scholars in the LIS discipline. It follows that issues concerning staffing in university libraries emerged with the dramatic transformations university libraries began to experience in the modern era. Scholars in the LIS discipline such as Moore-Field & Lang (2015), Gremmels (2013) and Bank & Pracht (2008) have contributed to exposing the role of staffing in university libraries performance. They identify the growth in the numbers of users and academic disciplines, information explosion and modern challenges faced by university libraries as conditions that promote staffing challenges. They identified the factors based on their analysis of internal challenges faced by university libraries without consideration of the challenges due to factors in the university as a whole and external to the university. Findings in this study elucidate that approaching staffing challenges in IS innovation from the perspective of occurrences with/within organizations alone has profound limitations. These limitations are corrected by including globalization trends (new managerialism: returns on investment/profit driven initiatives/cost-benefit analysis) and the organizational transformations in universities in the recent past (as a result of such trends) in the analysis of funding issues that have led to insufficient staffing. This study shows that external

factors can trigger staffing issues that influence IS innovation in organizations. It, therefore, follows that care should be taken when concluding that organizational factors are the prime factors that determine the staffing challenges that impact IS innovation.

This study turns stakeholders' attention to extra-organizational factors that impact IS innovation. It highlights the reliance of organizations (e.g. university libraries) on the personnel policies of their parent organizations (e.g. universities) when determining their staffing. Furthermore, it shows that factors outside parent organizations influence their decision choices about staffing and other issues. Consequently, based on the insights available in the extant literature and those derived in the empirical contexts of this study:

> *Proposition VIII: Inadequate staffing is likely to constitute IR innovation barrier to universities in Nigeria (and other developing countries).*

In the IS discipline, the organizational structure and its effects on IS innovation are taken very seriously. Given that organizational structure determines organization values, operational codes of conduct, actors' roles, lines of authority, supervision and communication lines (Ashkenas, *et al.,* 2015; Fiedler & Welpe, 2010), some IS studies that assessed the role of management support in IS innovation have also inquired into the role of organization structure in IS innovation (Lee, *et al.*, 2016; Liu, *et al.*, 2015; Ngwenyama & Nielsen, 2014). The assumptions about the importance of management support to IS innovation suggest that management is likely to use the authority and power vested on it via the organizational structure to encourage or coerce organizational actors to participate and support IS innovation (Avgerou & McGrath, 2007; Willcocks, 2004). Power, lines of authority and supervision dictated by organizational structure are, therefore, of importance to IS innovation. Literature underscores the need for IS innovators to harness support to facilitate the realization of their IS innovation aims (Feng, *et al.,* 2016; Lee, *et al.,* 2016). Despite the importance of organizational structures to successful IS innovation, much is still left to be done by IS scholars to provide insight to stakeholders about their role in promoting or constraining IS innovation.

The growth in the use of enterprise resource planning and other types of proprietary software has given rise to studies that focus on the IS/organization fit, that is,

the extent to which an IS fits organizational structure and operations (Nwankpa, 2015; Livari, 1992; Raymond, 1990). Insights from these studies reveal the importance of designing IS to fit organizational structure and operations. In these class of IS studies, organizational structure provides the framework for designing IS that is able to provide a platform for organizational actors to relate with one another and to perform organizational operations. In organizations that adopt hierarchical organizational structure, middle managers often play the role of gatekeepers of communication between lower level employees and top management. EPR and other types of proprietary software are designed to facilitate the implementation of organizational structures and operations of organizations. The extent to which they are successful in doing so is taken to be the extent to which IS innovators are able to achieve IS/organization fit (Yeoh & Popovič, 2016; Nwankpa, 2015; Livari, 1992). IS scholars who focus on enterprise resource planning examine the extent to which such software facilitates the enactment of organizational structure and operations. This is different from assessing how existing organizational structure impact on IS innovation with/within the organization.

In the case universities' libraries, IR innovation was constrained by communication between sub-ordinate officers and head librarians. Given that academic librarians serve as middle level managers, paraprofessional librarians that handle IR operations had to receive and/or pass their communications through heads of units and divisions. Furthermore, hierarchical organizational structure also impeded horizontal communication lines during IR innovation and, consequently, reduced the extent to which inter-unit/department communication was held during IR innovation. This formed a barrier to the recruitment of the necessary support to successfully implement IR in units/departments whose primary responsibilities were not IR innovation. In the IS discipline, challenges to the recruitment of support for IS innovation among stakeholders have not been fully explained from the perspective of organizational structure. Although many IS studies have addressed questions about why stakeholders may not participate in IS innovation, none of these studies (e.g. Yeoh & Popovič, 2016; Nwankpa, 2015; Livari, 1992) detail the role of organizational structure in recruiting participation. The implication of this is that the ways in which organizational structure comes to bear in IS innovation remains largely unknown to IS scholars and practitioners.

In the IR innovation discipline, scholars have paid attention to the impact of internal structures (organizational and social) of universities on successful IR innovation. Much of what is investigated in the IR discipline that is similar to the findings in this study relates to the role of the departmental relationship in IR innovation. IR scholars have underscored the role of relationships between university libraries and IT units on IR innovation (Utulu & Akadri, 2014; Shearer, 2013; 2003; Westell, 2006). A new revelation of this study is that the impact of university libraries and IT units on IR innovation depend on the organizational structures of the libraries. In other words, outcomes of ***inter***-department communications rely on the efficiency of ***intra***-organizational communication lines. Scholars and practitioners in the IS discipline must, therefore, consider the potential impact of ***intra***-organizational communications on ***inter***-departmental relationships during IS innovation. Consequent to insights in the extant literature and those derived in the empirical contexts of the study:

> *Proposition IX: Hierarchical organizational structure is likely to constitute IR innovation barrier to universities in Nigeria (and other developing countries).*

The diagram below shows the relationship between IR innovation barrier factors that may occur in institutional contexts.

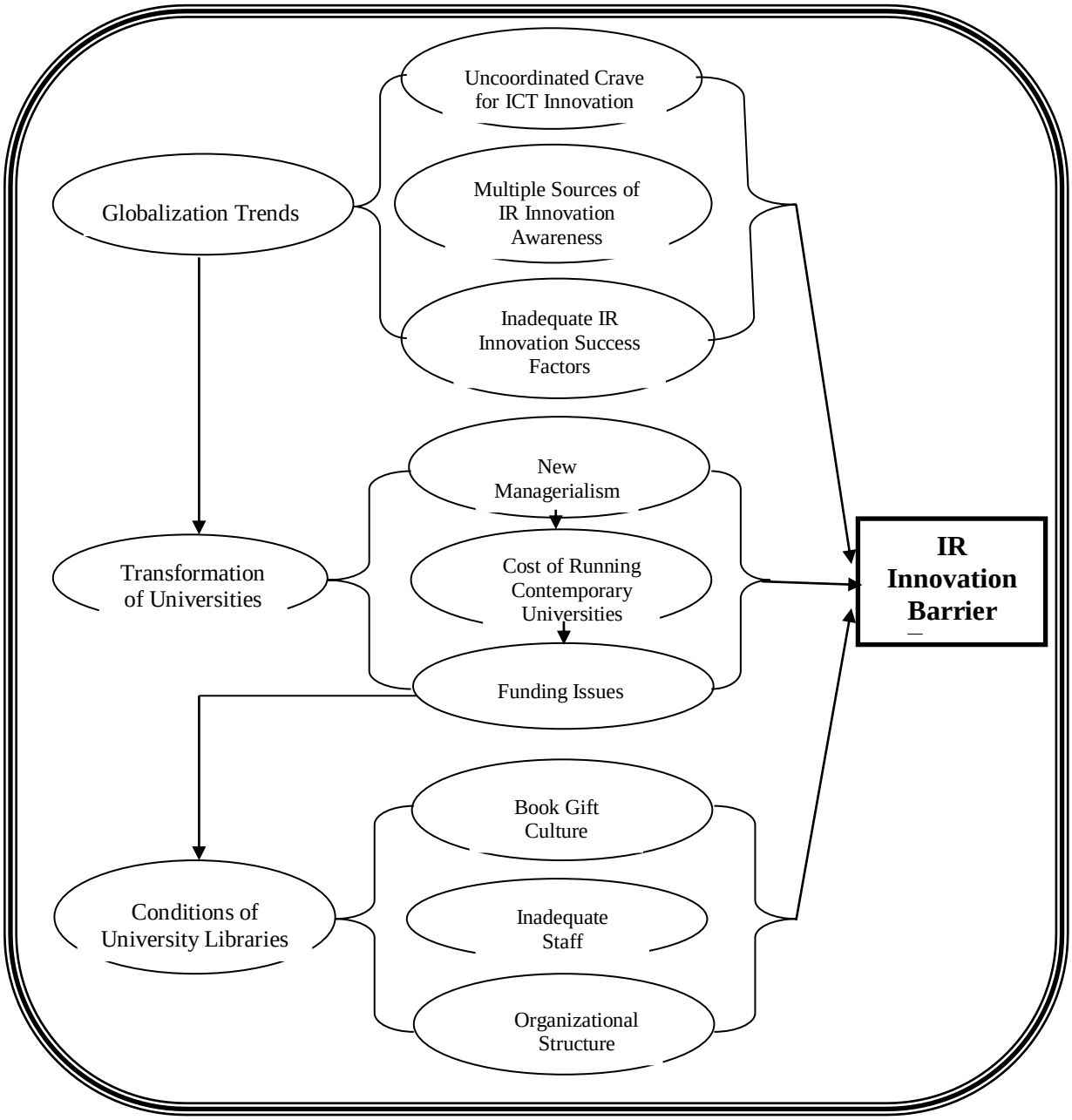


Figure 3.1: Dynamics of IR Innovation Barrier Factors at Institutional

3.9 Conclusion

At the inception of this study, my objective was to uncover novel IR innovation barrier factors by examining IR innovation in three case universities. I assumed that IS innovation barrier factors elicited in the extant literature are not sufficient for

stakeholders to account for the challenges of IS innovation in contemporary developing countries. The disappointing conditions of IR innovation in Nigeria provided the motivation for this study. The research question was as follows: what are the barriers of IR innovation in Nigerian universities and how did the barriers evolve? Interpretive inductive research approach and snowball sampling technique were implemented so that I may be a participant in the research process and the sample populations are directly relevant to the objective of the study. The study confirms the strength of the interpretive inductive research approach and snowball sampling technique in garnering novel insights in IS innovation phenomena. Key issues on the influence of globalization trends, recent transformations in universities as a result of such trends, and conditions of university libraries on IR innovation in universities were revealed showing how institutional level factors determine IS innovation at organizational and individual levels in developing countries. This study presents an entirely new perspective about why IS innovation is constantly being hampered in universities in developing countries. IS innovation barrier factors that are related to the combined effect of globalization trends, the transformation of universities and conditions of organizations have not been previously identified. The outcome of the study points to the limitations of using a single theoretical stance to assess IS innovation. It highlights the importance of inducing theory from data collected without the influence of existing theories. It is imperative for IS scholars to develop new theoretical perspectives that are derived in context. In this study, the objective of eliciting new IS innovation barrier factors relevant to both theory and practice of IS innovation in developing countries was met. The question of what constitutes novel IR innovation barrier factors in universities in developing countries contexts was answered. Institutional logics, traditional university management orientations and paradox barrier factors which were identified in Study 2 as factors that affect IR innovation in the case universities, were shown in this study to be promoted by entities that are not restricted to the local environment, but also exist in global international environments.

Chapter 4: Empirical Study 2

Organizational Level Assessment

Institutional Logics, Adherence to Traditional University Management Orientations and Paradox Barrier Factors as Factors Affecting IR Innovation

Abstract

Inductive research approach was used to carry out this study because it was assumed that there are clandestine innovation factors that are affecting IR innovation at the organizational level. Snowball sampling technique was used to identify the academics, administrative staff, ICT staff and librarians that were sampled. Participatory observation and in-depth interview were used as qualitative data collection technique. Findings derived through participatory observation and in-depth interview led to the collection of secondary data drawn from staff handbooks, handbooks of research and publication, and official websites of the case universities and key. Thematic data analysis technique was used to analyze data collected in the study. Study findings indicate that existing institutional logics, adherence to traditional university management orientations, and paradox barrier factors are negatively affecting IR innovation. The study's findings indicate that the case universities and, by extension, universities in developing countries with similar socio-technical background need to carefully identify how stakeholders within and outside universities impact IR innovation. Specifically, the study contributes to the following disciplines: information systems in developing countries, IS implementation and IR innovation.

Key words: Information Systems in Developing Countries; IR Innovation; IS Implementation; Institutional Logics; Organizational Memory

Everything you've ever wanted is on the other side of fear- George Addair

4.1 Introduction

An organization is defined as a prearranged group of people working to meet a defined goal. Examples of organizations include universities, business (for profit) organizations, governments, non-governmental and intergovernmental organizations, and not-for-profit corporations. Daft (2004) defined organizations as (1) social entities that (2) are goal directed (3) are designed to have deliberately structured and coordinated activity systems, and (4) are linked to the external environment (Daft, 2004: p. 11). Because organizations have these characteristics, they are confronted with different institutional logics, that is, the rules they create that give meaning to realities (Dacin, *et al.*, 2002). It follows that institutional logics are taken-for-granted norms, beliefs and values. Every organization, including universities, confront institutional logics that determine how they socially construct and give meaning to reality (Daft, 2004; Thornton, 2004). This makes it necessary for organizations that hope to gain legitimacy and achieve their goals to master the institutional logics prevalent in the environments within which they operate (Jay, 2013; Morgan, 1997). In reality, what goes on in universities are determined by the institutional logics they adopt either by their own bidding or by force (Akalu, 2014).

There is an insufficient amount of empirical research on the effect of institutional logics on the outcomes of IS and IR innovation realities in universities. IR innovation studies have not paid attention to institutional logics in their evaluations of factors that determine IR innovation in universities (e.g. Abrizah, *et al.*, 2010). Within the discipline of organization studies where more attention is focused on institutional logic, there have been few studies vis-à-vis IS and IR innovation (e.g. Bruns, 2013; Lok & de Rond, 2013). This essentially means that there is a dearth of studies assessing how the three types of institutional logics, namely, social, commercial and hybrid institutional logics, impact IS innovation in universities. Studies done on IS innovation in universities have persistently disregarded important social factors. In this study, the roles of the three types of institutional logics on the case universities' interpretation of IR innovation realities are revealed. The study shows that assessing the types of institutional logics used to interpret IR innovation realities in universities is very important to successful IR innovation.

The study factored into its assessment the impact of different organizations, namely, those that own, collaborate, regulate, compete and service universities on the types of institutional logics adopted by the case universities during IR innovation. Some of those organizations include the National Universities Commission (NUC), Tertiary Education Trust Fund (TET Fund), conference organizers, commercial publishers, ranking agencies, government, religious bodies, foundations and funding agencies**.** TET Fund, for instance, was established by the Federal Government of Nigeria (FGN) as an intervention fund/agency under the TET Fund Act of 2011. It is mandated to administer public funds for research, scholarships and academic travels. The NUC was also established by the FGN with the directive to regulate university education in Nigeria. The adoption of institutional logics promoted by these organizations resulted in the barrier factors that impede IR innovation in the case universities. IR scholars, however, have not paid attention to how the institutional logics promoted by such organizations impact IR innovation. For instance, the adoption of social institutional logic led to the adoption of traditional university management orientations by the case universities. By espousing traditional management orientations, the case universities (irrespective of whether they are publicly or privately owned) operated as closed systems and adhered to the gown and town philosophy. The gown and town philosophy promotes the notion that university communities are different and separate from the communities around them (Gavazzi, *et al.,* 2014; Bruning, *et al.,* 2006). The traditional management orientations also endorsed closed access publishing culture which negates the philosophies of the open access IR initiative. In the past, IR scholars have identified adherence to traditional management orientations as barrier to IR innovation (Abrizah, *et al.,* 2010; Davis & Connolly, 2007). However, they did not demonstrate the connections between institutional logics, traditional management orientations and IR innovation.

The case universities struggle with the institutional logics that, though unintentionally, work against IR innovation. Because institutional logics determine the socially constructed IR innovation realities, the philosophies derived from these logics promote conflicts that impede IR innovation. Paradox IR innovation barrier factors such as unreliable power supply, inadequate Internet access and paucity of research funds further compound the challenges to IR innovation. Paradox IR innovation barrier factors

are so termed because they exist despite efforts made by the case universities to become internationally acclaimed universities. This study shows that the paradox barrier factors are socially constructed, and provides a view different from that which suggests that unreliable power supply, inadequate Internet access and paucity of research funds evolve independent of human actions. The study provides answers to the following research question: *How do activities of individuals and organizations outside the university context constitute barriers to IR innovation in Nigerian universities?*

4.2 Literature Review

An important way of assessing the effectiveness of a contemporary organization is to investigate how well it relates to the cultural demands of the business environments within which it operates (Daft, 2004; Morgan, 1997; Meyer & Rowan, 1977). Such investigations contribute to the evolution of institutional theory and its two traditions, namely, old institutionalism and neo-institutionalism (Greenwood & Hinings, 1996). The large body of work produced by scholars in the neo-institutional theory discipline puts the question of whether organizations are affected by institutional logics to rest (Bruns, 2013; Jay, 2013; Berkley & Tolbert, 1997). Nevertheless, findings in this study reveal that there is more to be learnt about institutional logics and IS/IR innovation. The case universities are faced with institutional logics that evolve as a result of the activities of individuals and organizations that are not directly part of them. The institutional logics in the case universities promote adherance to traditional university management orientations that, in turn, impede IR innovation. Moreover, in the case universities, the institutional logics were instrumental in the social construction of the paradox barrier factors that also impede IR innovation. This study corroborates the notion that, like other organizations, universities are influenced by institutional logics when dealing with IS innovation.

Despite the importance of institutional logics to successful organizing, scholars in disciplines that study organizational phenomena, including the IS discipline, still do not pay enough attention to how institutional logics determine organizational realities. Several IS studies paid attention to the relationship between events at the individual level and IS innovation outcomes in organizations (e.g. Kudaravalli, *et al.*, 2017; Ngwenyama & Neilsen, 2014; Halloran, 2008; Orlikowski, 2006; Lamb & Kling, 2003). Studies that assessed the role of institutional logics on the realities surrounding decision making in

organizations, including universities, show that there is room for further research by IS scholars. A focus on the influence of institutional logics promoted by events at organizational level on IS innovation would allow IS scholars to identify more IR innovation factors (e.g. Jay, 2013; Thornton, *et al.*, 2012; Meyers & Rowan, 1977). This awareness may have influenced IS studies where authors argue that institutional logics have impact on IS innovation (Sahay & Mukherjee, 2015; Linderoth, 2014; Sahay, 2006; Orlikowski & Barley, 2001). Yet, the number of studies that regard universities as organizations that are shaped by institutional logics is disappointingly few. This is so in spite of the fact that, like other organizations, universities have been of interest to several disciplines. For example, one such discipline is education which studies teaching and learning techniques, environments, evaluation, and IT in education (Dunleavy, Dede & Mitchell, 2009; Okebukola, 2006; Slaughter & Leslie, 1997). Unfortunately, the discipline of education has not interrogated how institutional logics come to bear on teaching, learning, evaluation and adoption of IT for education in universities.

Another discipline that has contributed to studying universities is the discipline of economics, specifically, development economics. Development economists who study universities are interested in assessing the role of cost of university education on how economic resources are expended by societies. They are interested in looking at the value and cost of university education to individuals and societies. They also try to propose the parameters which determine who is to bear the cost of university education and how this may impact the economic development of societies (Psacharopoulos, 2014; Johnson & Wilkins, 2002; Krueger, 1999). Given that universities are the major producers of labour (and entrepreneurs), development economists tend to assume that assessing the value-adding capacity of labour (and entrepreneur) is a logical way to predict the link between economic productivity and university education (Bloom, *et al.* 2014; World Bank, 2010; Akabayashi & Naoi, 2004). Development economics, through these studies, generate theories that expose the role universities play in the development of societies (Kruss, 2017; Phillips & Olson, 2015; Mollis & Marginson, 2002; Buchanan & Devletoglou, 1971). A critical look at the contributions of development economics to understanding universities as organizations shows that the discipline has not done much

to inquire into the impact of institutional logics on the contributions of universities to the development of societies.

The mainstream IS discipline has also contributed in some ways to the existing body of knowledge on universities. IS scholars that study universities sought to understand the 'whats,' 'whys' and 'hows' surrounding IS innovation in universities (e.g. Uwadia, *et al.*, 2010; Alavi, *et al.*, 1997). Similar to other organizations that have been of interest to IS scholars, universities are mainly conceptualized as a collection of beliefs, norms and values that may impact and/or be impacted by IS innovation (Ngwenyama & Morawczynski, 2009; Lamb & Kling, 2003; Alavi, *et al.*, 1997). Existing IS studies on institutions and IS innovation adopt old institutionalism and, therefore, hold the view that institutional logics are products of a single organization, that is, the organization under assessment. Because of the existing gap in knowledge of factors that determine IS innovation in universities in developing countries , the ISDC discipline has continued to strive to contribute to this area of knowledge. This is because several studies done by organizations and individuals consistently indicate that universities are crucial to the development of developing countries (Ezema, 2013; Nwagwu, 2013; Hansen & Lehmann, 2006; Chan & Costa, 2005). ISDC scholars are interested in knowing how IS can further boost the capabilities of universities to promote development (Walsham, 2017; Ngwenyama *et al.*, 2006). Although the few ISDC studies that identified the role of institutional logics in IS innovation in universities seem to argue that institutional logics evolve due to events at organizational level, their arguments point more to the role of intra-organizational relationships. Consequently, the current body of knowledge regarding the influence of institutional logics on IS innovation in universities in developing countries is inadequate.

A similar stream of research has also been done in the library and information science (LIS) discipline. The primary concern of LIS scholars that focus on universities are university libraries. Their studies are mainly on the relationship between university libraries and members of university communities (e.g. Rubin, 2017). They concentrate on assessing information management requirements of university communities by considering how university libraries can improve on their mandates to identify, select, acquire, organize, disseminate, and conserve and preserve information required by

members of university communities to perform their statutory duties (Abrizah, *et al.*, 2010; Kim, 2010). Although institutional logics may affect how university libraries render information services to members of university communities, LIS scholars have not paid attention to them. Studies done that involve commercial publishers, booksellers and other organizations did not look at how the relationships university libraries have with these organizations evolve into institutional logics (Vasileiou, *et al.*, 2012).

When IR was invented, scholars who promoted it simply felt that it should be managed by the information management personnel in university libraries (Shearer, 2003; Smith *et al.*, 2003; Harnad, 2001). In fact, Smith, *et al.*, (2003) claimed that the DSpace IR innovation software was developed by a team that comprised software programmers and librarians. Over the years, therefore, LIS scholars and practitioners have taken the front role when it comes to implementing and studying IR innovation in universities (Pinfield, 2015; Burns, Lana & Budd, 2013; Oduwole, 2013; Ezema, 2013; Bosch & Harnad, 2005; Broody & Harnad, 2005). The major themes that are addressed in IR innovation studies are IR acceptance, perception, effectiveness and how different arms of university communities, particularly academics are reacting to it (Abrizah, *et al.*, 2010; Davis & Connolly, 2007). There are also IR studies that compared IR innovation in different universities. The studies were done to assess the possibility of inter-university collaboration and differences in strategies used by different universities (Zaid & Okiki, 2014; Palmer, *et al.*, 2008). Given that most IR studies lack the kind of assessment that exposes institutional logics, Kennan & Wilson (2006) advised on the need for IS scholars to develop deeper interest in studing IR innovation phenomena. Kennan and Wilson argue that IS scholars are likely to expand the scope of IR innovation studies to include the evaluation of factors related to relevant organizations that are outside the universities. A review of the themes currently being studied by IR scholars shows that some IR studies appear to address external factors that come to bear during IR innovation (Ojstersek, *et al.*, 2014; Zaid & Okikit, 2014; Paul, 2012). These studies addressed issues such as collaboration of universities and the policy regimes that are put in place by government and universities. It is, however, only through critical assessment of these studies that one will see that the role of institutional logics in IR innovation has

not been examined (see e.g. Ukwoma & Mole, 2017; Zaid & Okiki, 2014; Abrizah, *et al.*, 2010; Ahmed, 2007).

The revelations derived in this study show that the IR innovation experiences of the case universities were informed by the institutional logics they used to give meaning to IR innovation realities. These revelations are in line with notions postulated in studies that address how institutional logics impact actions taken in organizations (e.g. Thornton, *et al.*, 2012; Zhao, 2004; Schutz & Luckmann, 1989; Armacost, 1985; Meyer & Rowan, 1977). Consequently, even though there appears to be room to harness the activities of some key organizations to support IR innovation through a review of the institutional logics promoted by these organizations, this opportunity is yet to be seized. For instance, in past years, much clamour has been made with regard to implementing mandatory requirement to deposit all publicly funded research studies in IR (Choi & Kim, 2017; Pinfield, 2015; Ferreira, *et al.*, 2008; Sale, 2005). This indicates the existence of a fundamental opportunity to promote IR innovation in the case universities through TET Fund and NUC. In Nigeria, although public funding for research is scarce, TET Fund supports research studies, conference attendance, and scholarships for full academic programs and exchange programs locally and abroad to select staff of Nigerian publicly owned tertiary institutions. TET Fund, therefore, has the potential to promote IR innovation in Nigeria by making it mandatory for academics that benefit from its funds to deposit the outcomes of their studies in their universities' IR. This would go a long way to improve the participation of academics in IR innovation. TET Fund can also make it mandatory that publicly owned Nigerian universities should innovate IR for their academic staff to be considered for funding.

The NUC also has the potential to influence the case universities to embrace IR innovation. Historically, the NUC has played vital roles that determined IR innovation trends in Nigerian universities. However, it has not capitalized on its influence by incorporating into its accreditation requirements of mandatory ownership of IR. NUC's program accreditation requirements include the number of academic journals procured for academic programs. It logically follows that IR resources ought to be given consideration in light of their capacity to promote access to academic papers and facilitate the accreditation of various academic programs. Consequently, this study

reveals important issues connected to how NUC and TET Fund would have positively impacted IR innovation in Nigeria because of the institutional logics they promote. Available IR studies have persistently focused on occurrences and factors within universities (e.g. Utulu & Akadri, 2014; Oduwole, 2013; Kim, 2010; Westell, 2006; Broody & Harnad, 2005). A study by Zaid & Okiki (2014), however, a slight variation from studies that were entirely based on the assessment of factors within specific universities, assessed how collaboration between two universities can promote IR innovation. For the IR community to consider organizations outside universities as potentially complementary to IR innovation and promote this view through the institutional logics, universities must first be made aware of how traditional management orientations influence their perspectives of other organizations. Traditional management orientations in universities propagate the town and gown notion, and views that universities are closed systems.

The self-perception of universities as closed systems encourages the assumption that external organizations have little to contribute to the attainment of their goals. As such, they assume that the traditional closed access publishing model is the way to disseminate scientific knowledge (Abrizah, *et al.*, 2010; Jantz & Wilson, 2008; Davis & Connolly, 2007). Findings in this study show that institutional logics, traditional university management orientations and paradox IR innovation barrier factors are interconnected. The paradox IR innovation barrier factors include unreliable power supply, limited access to the Internet and paucity of funds to support research. In the past, scholars have pointed out the role of these factors in IR innovation but did not see them as paradox IR innovation barrier factors (Nwagwu, 2013; Ahmed, 2007). Instead, these barrier factors were viewed as events and not as realities that result from man-made social processes. This study shows the processes through which indicators of paradox IR innovation barrier factors evolve as a result of institutional logics the case universities used to interpret IR innovation realities and the impact of adherence to traditional management orientations on their interpretation of both closed and open access publishing models. It succinctly shows that identified paradox barrier factors are socially constructed.

Given the arguments presented so far, scholars who attempt to study the role of institutional logics in IR innovation encounter three issues: 1) neo-institutional theory becomes relevant to studying and interpreting the phenomena enacted during IR innovation (Greenwood & Hinings, 1996; Meyers & Rowan, 1977). 2) since scholars oriented toward the institutional logic theoretical stance primarily focus on identifying how institutional logics evolve, the activities of organizations outside universities become relevant to assessing IR innovation (Ocasio, Loewenstein & Nigam, 2015; Burns, 2013; Lok & deRond, 2013). 3) the above two issues emphasize the need for studying the impact of institutional logics on IR innovation (Jay, 2013; Menard, 2004). These three issues were addressed in this study. First, the study shows that neo-institutional theory is relevant to studying IR innovation. Second, the study reveals how individuals and organizations outside universities contribute to creating institutional logics that determine IR innovation. Third, the study exposes new realities on the importance of institutional logics to assessing how occurrences within universities evolve.

4.3 Organizational Contexts of Cases

The priorities of the NUC and TET Fund influence the case universities' institutional logics that are then used to interpret IR innovation realities. The case universities committed most of the resources available to them to provide for facilities and infrastructure required for NUC academic program accreditation. Given that IR is not part of the resources required for accreditation, University I and University II did not commit resources to IR innovation. In the absence of resources, those in charge of IR innovation could not actualize their IR innovation aspirations. Another problem University I and University II confronted with regards to funding IR innovation is the legislation that makes it unlawful for them to benefit from funds received from the TET Fund. TET Fund, by law, is only allowed to provide support to publicly owned universities. Hence, University I and University II may not be responsive to mandatory requirements of public funds to deposit research outcomes in IR. The orientations of the owners of the case universities also affect IR innovation. Given that University I is owned by an individual, the ideology of the owner dominated the ways decision were taken with regards to ICT innovation in the university. Most ICT that were innovated were those that promoted the proprietor's goals and interests. This is also the case with

University II which is owned by a religious body. University II funded ICT and infrastructural development projects that are likely to promote its religious ideology more readily than IR innovation. For instance, the university spent about eight hundred million Naira to build a hall for religious activities. The university on the other hand has not provided for the building of a library complex that is much needed to provide better library information services to staff and students, which also affects its IR innovation. In University III, projects that were readily funded were those that promote government image and conformity with government educational programs. This laid constraints on the extent to which University III can independently decide on projects that should be executed. For instance, the university does not have a library complex and a complex built specifically for its ICT unit. Although IR has been innovated in the university, the growth of IR is still hampered by government policies that limit the resources that the university can commit to IR. For instance, there is no policy that mandates TET Fund to provide funds to directly support the growth of IR innovation, whereas there is a policy that directs TET Fund to provide funds for the publication of some journals by public universities in Nigeria. The consequence is limited Internet access, unreliable power supply and paucity of funds committed to support research.

4.4 Research Method

4.4.1 Research Philosophy

Like study one, this study is driven by the interpretivism research philosophy. In other words, it assumes that there is no reality other than that which is socially constructed (Ngwenyama, 2014; Burrell and Morgan, 1979). The implication of this is that the phenomena identified in this study are assumed to be socially constructed, man-made and temporal (Saunders, *et al.*, 2009; Cavana, Delahaye and Sekaran, 2001; Weick, 1983). So, institutional logics, external pressures, organizational memory and paradox barrier factors are assumed to be socially constructed and temporal (Checkland & Holwell, 1998; Deetz, 1996; Walsham, 1995). The study conceptualizes its subjects as those that create and give meanings and interpretations to the barriers of IR innovation identified in this study.

Given that study one revealed novel IR innovation barrier factors as a result of the

adoption of the inductive research approach, the approach was also used in study two. I chose to adopt inductive research approach because I believed that there were additional clandestine IR innovation barrier factors that were yet to be detected. Study two further validates extant literature underscore the power of inductive research approach to facilitate the creation of novel theories (Gioia, Corley & Hamilton, 2013; Collins & Hussey, 2003). The inductive research approach enabled me to identify and explain additional novel IR innovation barrier factors including: external pressure from individuals and organizations, conflicting institutional logics, organizational memory and paradox barrier factors.

4.4.2 Specific Ethics Consideration

Research subjects were offered the opportunity to review the analysed findings of the research to be presented in the thesis, some ethical issues were identified and ironed out. For example, one research subject felt that indicating that they were observed in the newspapers reading area of the library could lead to sanctions. This was, however, addressed.

4.4.3 Research Process

Step 1: Since I had been immersed in the research contexts for about six months by the time I started Study 2, I started the study with participatory observation. At this point, most people in the case universities were familiar with who I was and what I was doing. This familiarity facilitated some of the interactions that I had with them. During the period of participatory observation, I observed that activities of individuals and organizations outside the case universities can also constitute IR innovation barrier factors. I, therefore, came up with the following research question: *How do activities of individuals and organizations outside the university context constitute IR innovation barrier factors in Nigerian universities?*

Step 2: I adopted the snowball sampling technique. The first interview sections that I had was held with academics. This was followed by a series of interviews that I had with IT Directors, Deans, Librarians and IT personnel. In all, I had thirteen interview sessions in University I, about ten interview sessions in University II, and eleven interview sessions in University III. All interviews were recorded using Samsung Galaxy Note. I also recorded my observations in a diary and consulted the diary before and after interviews.

This step took about four months to complete in the three case universities. I spent one month to double check and validate responses with research subjects. All in all, I spent five months on Step 2.

Step 3: I analysed the research data collected during in-depth research interviews and participatory observation. I used ATLAS.ti software for data analysis and to document some of the findings recorded in my field diary. I revisited some research subjects to seek clarifications on their statements that were unclear to me during data analysis. I also cross checked with research subjects to validate some of their responses. I completed the theoretical elaboration of my findings during this step which helped me to arrive at the research model for study two.

Step 4: I wrote up study two and reflected upon the knowledge gaps that were revealed. My reflections provided me with insight into the reasons why the gaps identified are persistently overlooked in the literature.

4.4.4 Data Collection: Interviews

I adopted the in-depth interview method because it allowed me to engage with research subjects during the interview sessions in a way that enabled me to tease out fundamental issues related to the research question. It facilitated my choice of intensive interrogation of a small sample. This enabled me to tease out fundamental information about the research question which ordinarily may have been difficult to tease out if other forms of data collection techniques were adopted (Boyce and Neale, 2006). The potential benefits of in-depth interviews to collect novel information was complemented by the unstructured nature of the interviews carried out during this study. Because the interview was unstructured, it was spontaneous and emergent and, therefore, supported in-depth discussions that facilitated the exposure of new theoretical insights.

Table 5.1: Category and Number of Interviews

Categories	**Participants**	**No. of Interviews**
Academic Administrators	Deans Heads of Department	6 5
Staff	Academics	10
	Non- Academic Administrators	3
	Librarians	10
Total Number of Interviews		**34**

4.4.5 Method of Data Analysis

The data analysis technique used in the study is thematic data analysis (Thomas, 2006: Braun and Clarke, 2006) using the ATLAS.ti software. Themes regarding the factors of IR were identified and explained. The procedures that I followed include invivo coding, identification of relevant quotations that mirrored similar themes, and presentation of narratives to explain the barriers of IR innovation from the empirical data. This involves reading and re-reading the data collection several times until I understood thought processes, motives and underlying interests and meanings that were not apparent. Theoretical elaboration was completed after this initial procedure as a means of building new theories of IR innovation barriers.

4.5 Data Analysis

4.5.1 Interrogating Institutional Logics

Social Institutional Logic

Historically, the first sets of universities that were established were social institutions. This inclination has been maintained over the years despite the transformations in the assumption about what universities stand for. In Nigeria, where the case universities are situated, the perception of universities as social institutions informed the establishment of universities in the country. Consequently, the first 50 years (1948-1999) since the founding of university education in Nigeria were dominated by government owned universities. Since 1999, three privately owned university were licensed to operate in the country. Yet, the thinking that universities are social institutions remains and influences the ways in which Nigerian universities are designed to operate and set their objectives. For instance, given that University III is owned by the FGN, it is seen as a purely social institution. Its establishment by the FGN was to provide social support in the form of university education to Nigerian citizens. As such, the university does not charge tuition fees.

Reflecting on the consequences of the view of a university as a social institution on the university's finances, the Dean of Social Sciences opined, "*Private universities are lucky. If we have our ways here we would charge tuition fees to enable us get more money.*" An academic staff who concluded her postdoctoral fellowship in South Africa

also complained saying, *"...you need to see how easily you could get research funds in [the university where she had her postdoctoral fellowship]. You can't compare it with what you have here."* Running as a social institution negatively impacts the university's ability to generate the funds it requires to support research activities. It also affects how the university designs its research programs given that all of the available research fund is provided by the government through the TET Fund. Research funds sources such as the Senate Research Funds and other university based funds are not active and no fund is provided for research by private organizations and individuals.

Surprisingly, University I and University II, though privately owned, also exhibit some characteristics of social institutions. For instance, in University I, the head librarian being a member of the university's management team, indicates that the university has programs through which "*...we ensure that those who can't afford the fees we charge are helped."* An academic staff who teaches in the Faculty of Law in University I also indicated that "*...we provide some palliatives to students…if you are a student, if you bring in another student (sic) you will be given some percentage off your fees.*" She went further to note that "*...we have a hall for rent in the university, any staff or student that help get a customer to use it get ten percentage of the money made from it by the university.*" These claims were confirmed by an administrative staff who said, "*The university has a lot of programs to help the poor and less-privileged. There is a program for those who lost their bread-winners, the very poor who can't afford private university education and those who can provide proofs that the person paying their fees lost his/her job.*" Another administrative staff in University I, however, confessed that providing social services "*...have ways they distort our financial plans for other things. You know here the bulk of the money we budget for are got from school fees.*"

The Deans of Academic Planning in University I and University II are of the opinion that shortage in funds takes its toll on things that have to do with research as it is easy for the universities to cut back on budget for research and study materials than on other necessities, projects and plans. These include power generation, building construction and annual membership subscription to university associations, etc. The case universities do not see IR innovation as a technology that could be used to promote the programs they embark upon given the ways they used social institutional logics to

interpret IR innovation realities. They do not see the use of IR for free distribution of scientific knowledge to the public as part of their mandates as social institutions. Instead, IR innovation is narrowly conceptualized as something that only benefits universities through visibility and popularity in the global academic landscape.

4.5.2 Commercial Institution

In contemporary times, through consultancy, patents and copyrights, and involvement in business activities, universities have made large sums of money that have then used to support their programs. In fact, contemporary universities are beginning to operate in ways similar to commercial institutions. In Nigeria, this scenario is more pronounced in privately owned universities whose major sources of funds are derived from monies paid by students as tuition fees and from fees paid for other services they render. In the case of University I and University II, tuition fees are the primary source of funds to pay for salaries, basic amenities such as power supply, water services, and educational and academic resources required in laboratories, libraries and computer centers, among others. In University I, one of the librarians indicates that the university charges moderate library fees, which amounts to one thousand percent of what University III charges its students as library fees. The idea behind this is that University I and University II offset about seventy-five percent of their annual budget for libraries through the library fees. University III, being a government owned, derive the money it needs to off-set its annual library budget from government subvention.

University I and University II also apply the same means to derive the monies needed to provide other required services in the universities. An administrative staff in University II indicated that students' computer registration fees are used to pay companies that provide Internet services to the university. Similarly, University I also uses computer registration fees to off-set bills accrued for Internet services. The amount charged for tuition fees and service fees in University I and University II is driven by the need to, at a minimum, break-even. An administrative staff in University II reveals that "*[t]his is the only way we can survive.*" Government policies, price regulation policies and students' and staff's union activities limit University III's ability to apply similar means to break-even for the costs associated with services rendered to students. The head of ICT unit in the university indicates that "*...some of our lecturers even criticize*

any attempt to increase the amount paid for IT services by students. They make provocative comments in classes."

All three case universities do not break-even irrespective of whether or not their specific conditions favour the charging of tuition and service fees. While University I and University II complain about the number of students that could afford the tuition fees they charge, University III complains about the government's insensitivity to inflation and the effect of the government's no-increase-in-fees policy on the university's finances. Apart from the resulting funding issues that negatively affect IR innovation, the philosophies underlying the commercial institutional logic also impacted the case universities' view of IR innovation. Given that the advocates of IR innovation emphasize that it should be available free of all charges, it falls short of the philosophies of commercial institutional logics that the case universities use to interpret its realities. Invariably, IR is innovated with free open source software. Training and implementation are also expected to be done freely by designated consultants. The free nature of IR innovation therefore requires that IR resources are made available to users free of charge. These conditions made IR innovation unattractive to key stakeholders in the case universities. Unfortunately, those that value the philosophies of IR innovation are not among the key stakeholders whose voices are heard loudly when it comes to IS innovation.

4.5.3 Hybridization

There is the general assumption that privately owned universities are likely to run as commercial institutions and that publicly owned universities are likely to run as social institutions. Findings in this study, however, show that both privately and publicly owned universities combine commercial and social institutional logics. They do this as a result of the social pressures that they face when dealing with different aspects of their existence. For instance, in its bid to meet its financial needs, University III generates internal revenue by implementing certain programs. The university produces and sells table water, bread, farm produces and other consumables to students, staff and members of the host community. The university also has a cyber café where students are charged rates at par with private cyber cafés outside the university charge. Being self-sustaining and a revenue stream, the university provides the cyber café with power supply more

readily than it does the Internet centres attached to laboratories, libraries and faculties. University III also places a strong emphasis on the need for academics to attract funds from external sources as a way to augment the finances it gets from TET Fund for research. The university charges ten percent administrative fee for any research fund attracted from external sources. IR innovation has the potential to advance the university's interest in attracting external research funds. Unfortunately, the university did not view IR innovation positively and, as a result, key stakeholders in the university did not associate IR innovation to achieving the university's aim to attract external research funds.

One academic staff in the university argues that "*institutional repository is good. It increases the possibility that your work will be seen, accessed and used. If you become a popular scholar, you can easily secure funds and collaboration outside*." An academic staff specifically notes that "*…the other day I had a discussion with a staff in ICT, he told me how I can get popular and win funds as a result of institutional repository."* While it is logical to argue for IR innovation from this perspective, the perspective has not been linked to commercial institutional logic. This is because the commercial gains accrued due to IR innovation cannot be directly linked to IR. They were linked to quality studies and commercial publishers' driven scientific knowledge publication outlets which contradict IR innovation philosophy. This impacted the extent to which the university was ready to support IR innovation.

University I and University II do adopt some institutional logics that are similar to those of social institutions. The two universities grant research funds to members of academic staff because they do not have access to grants provided by government through TET Fund. The grants are specifically meant for studies that interrogate locally relevant research phenomena. The philosophy behind this was summed up by Dean of Academic Planning in University II: "*…it is a way to actualize our social corporate responsibilities*" and Dean of Academic Planning in University I: "*This university prides itself in the ways it promotes the development of the host community and the country as a whole…*" However, the staff that benefited from research funds complained that the fixed amounts that were provided usually covered a portion of the total funds required for the studies. An academic staff in University I who was funded for his research sais,

"*What I got from the university, although, is small (sic), was helpful. It covered only my transportation.*" In most cases, academic staff in the university use their personal money to augment what they get from the university. The problem with this is that research is abandoned if the researcher could not afford to personally augment the funds s/he got from the university. The Dean of Academic Planning corroborates the fact that research funds provided by the university are small. He, however, submits that "*...as a university we need to support community services rendered to our host communities and the nation.*" Although the university did not have IR at the time this study was carried out, it also does not have any policy that encourages academics to submit studies completed with funds received from the university to the library or a place where they can be accessed by members of the university community. This further shows that the case universities did not in any way link IR innovation to their social institutional logics they adopt. They did not see how IR innovation could help them reach the social corporate responsibility goals. This is irrespective of the fact that they adopted hybrid logics in order to solve legitimacy problems. Unfortunately, their view of IR innovation leads has led them to the assumption that it cannot be used to promote their drive to gain legitimacy. Hence, the adoption of hybrid logic did not have any positive impact on IR innovation despite its potential to do so.

4.5.4 Adherence to Traditional University Management Orientations

Gown and Town Philosophy

Another major finding in the study is the effect of adherence to traditional university management orientation on IR innovation. This is surprising considering that this study also identified the negative impact of current transformation of universities on IR innovation. An important empirical observation is that while the case universities are transforming, they are also conscious of traditional management orientations that universities are known to implement. Consequently, the case universities still held on to the gown and town philosophy that has been part of universities for ages. This determined the extent to which the case universities are unable to see the full range of factors that come to bear in their drive towards IR innovation. First and foremost, the gown and town orientations made the case universities to only identify IR innovation

stakeholders that are within them. The stakeholders, according to the librarian put in charge of IR innovation in University I, include academics "*who produce the research papers we are to store in the IR.*" Similar idea was propagated in University II by the Director of Academic Planning when he notes that, "*based on our talk, we have to look for a way our lecturers will buy into the idea. You know they are the primary drivers of the work [IR innovation].*" In University III an academic staff indicated that "*for this [IR innovation] to be a success, management must be involved."* The Dean of Social Sciences in University III indicated that "*If management wants us to enforce its use among our lecturers, they should come up with an enforcement policy memo.*" The head librarian in University I also indicates that the vice-chancellor, deans and heads of department: "*are mainly the people through which I can get whatever I want to get [with regards to IR innovation]."* In University I a librarian opines that "*[t]he library should be the driver…and the ICT department should support…the management who is going to release the funds must also be carried along.*"

Key stakeholders identified by research subjects are academics, management, ICT staff and librarians. The idea behind this notion is traceable to the adherence to traditional university management orientations which views universities from the gown and town perspective. Observations show that research subjects view IR innovation as an activity that does not concern those outside universities. This is despite the fact that some of them are aware of the fact that papers already published in conference proceedings, journals and books may be deposited in IR. The implication that publishers and conference organizers are IR stakeholders did not trigger their reasoning towards identifying stakeholders outside their universities. If the role played by publishers and conference organizers in the processing of scholarly publications deposited in IR is considered, it is likely to become clear how communication and agreements between universities and other entities involved in the production of scholarly publication has become inevitable in IR innovation. While commenting on the need to see publishers and conference organizers as stakeholders, and therefore initiate communication with them, the head librarian in University I argues that "*we have not thought about including plans to teach our academics about things they may need to negotiate with publishers and conference organizers. Institutional repository is clearly a university issue.*" Even in

University III where a functional IR has been put in place, a staff in the ICT unit who is meant to coordinate IR activities reveals that "*We don't think about people outside here.*" The gown and town philosophy ensures that member of the case universities' communities see IR innovation as purely a university (gown) issue.

Traditional Scholarly Publishing Model

Another issue that emanates from universities adhering to traditional university management orientations is adherence to traditional scholarly publishing model. Globally, universities are seen as the major producers of scientific knowledge. They developed codes of conducts for producing scientific knowledge which, over the years, have become institutionalized. Scientific knowledge production that fall short of established codes are considered invalid and unreliable. This widely accepted position has affected the case universities' drive for IR innovation. This is more profound among academics planners, academic administrators like Deans and HODs, and academics with history of publishing in 'quality' outlets. Consequently, concerns shown by academics in the case universities revolve around ensuring quality of IR publications. An academic in University I argues that, *"[h]aving told us about the workability and advantages of institutional repository, how can we ensure that we don't use it to surcharge ourselves by exposing low quality research outputs out there."* Another academic staff in the university asks "*How can we ensure quality assurance? Are we going to have editors in each faculty to deal with that?* In University II, the Director of Academic Planning argues that "*Putting papers of all kinds on the Internet without editing and assuring their qualities can jeopardize all we have done to ensure that our people publish in quality outlets.*" The arguments raised concerning quality of IR resources and the need for reviews were based on assumptions underlying traditional scholarly publishing model.

Those academics who are well published in 'quality outlets' also see IR innovation as a way to help 'lazy' academics who do not produce quality research that are publishable in good outlets. One academic staff complains "*we have a lot of our colleagues who are lazy and do not want to work hard enough to publish in places like Elsevier, science direct and co(sic).*" These opinons imply that research subjects did not consider that papers that are deposited in IR may have been edited and published in formal outlets. For example, peer reviewed conference papers that have been delivered

in conferences, post prints of journal articles already published in journals, including those that are open access based and other publishing outlets that may have gone through editing such as books may be deposited in IR.

One other way academics see IR innovation vis-à-vis traditional scholarly publishing model is through the lens of the requirements for appointment and promotion of academic staff. Academic staff handbook of the case universities provide information about the number and quality of publications that may be accepted for consideration in decisions of appointment and promotion. In other words, the case universities use similar publication criteria for appointing and promoting academics. Very prominent in the handbooks of the case universities are requirements that have to do with what constitute acceptable academic publication outlets. The case universities give room for publishing in electronic journals, although they did not specify the type of electronic journal that they may accept. In other words, they did not specify if the acceptable electronic journal outlets should be closed access or open access. For instance, University II's staff handbook indicated that "For a candidate to be promoted from lecturer grade two to lecturer grade one, s/he must have spent three years as lecturer grade two. S/he must also have published three journal articles, one of which could be in an electronic journal." These requirements are similar to those for academic promotion in University III with the difference being that University III accepts electronic journals are based on percentages. For example, an academic staff that is seeking promotion from lecturer grade one to senior lecturer position must have thirteen publications in journals, twenty five percent of which may be published in electronic journals. IR innovation could be implemented so that the codes used to promote traditional scholarly publishing can also be used to promote it. For instance, academics could be accorded some academic rewards based on the number of scholarly works that they have deposited in their universities' IR. This can be supported by the argument that depositing academic publications in IR promotes access to technical and scientific knowledge necessary for scholarship and development. Given that this has not been taken into consideration, ideas derived from traditional publishing model were used to antagonize IR innovation.

Universities as Closed Systems

Arguments about whether organizations are only influenced by internal factors or by both internal and external factors brought about the classification of organizations as either closed or open systems. As universities still adhere to traditional university management orientations, most times it is taken-for-granted that they are, to some extent, open systems. Although universities seek collaboration with other stakeholders like industry, governmental organizations, governments and individuals, they still believe that there are certain areas of their existence that are closed to external stakeholders. The areas that are considered closed primarily involve the core mandates of universities, that is, teaching and research. In the case universities, the idea that they are closed systems when it comes to issues concerning scholarly publishing is also enshrined. This is revealed by the views of the head librarian in University I, the Director of Academic Planning in both University I and University III and most academics in the case universities regarding IR innovation. They have concerns about the validity and justifiability of IR innovation as a medium for disseminating scholarly knowledge. A surprising concern of these stakeholders with regards to IR innovation is that it would allow 'outsiders' to participate in traditional scholarly publishing. This is despite the fact that both academics and commercial publishers collaborate in the traditional scholarly publishing model. So, when I remarked about the collaboration between academics and commercial publishers the Director of Academic Planning in University II argues that, *"what commercial publishers do is to coordinate the printing of scholarly publishing. Every other thing, in fact, the most important things are handled by academics…"* I agree that traditional closed access publishing has been designed in such a way that core aspects of the process involve academics' engagement in quality assurance/control. In reflecting on the Director's conceptualization of the 'outsider' when it comes to scholarly publishing, he seems to suggest that scholarly publishing is not influenced by commercial publishers despite the fact that they 'coordinate' the printing of scholarly publications. He has taken the role of design, printing, marketing and pricing in scholarly publishing for granted. He also neglects the fact that commercial publishers determine subscription fees for academic journals.

The Dean of Sciences in University I is also of the opinion that universities are closed systems when it comes to scholarly publishing. According to her, *"we [academics] ensure that quality is maintained by publishers. In fact, it is academics that have the skills to detect invalid research claims through peer-review and other forms of assessment of scholarly works."* I observed that academics consider it unthinkable that other people or entities that are not part of universities could influence scholarly publishing. They believe that universities are able to control any influence from 'outsiders.' An academic staff in University III argues that, *"You cannot take universities for-a-ride when it comes to ensuring that people who are not supposed to influence them are deprived that opportunity."* Another academic staff in the university argues that *"academic is like a cult, if you're not initiated into the academic cult, you can't participate in core aspects of university life."* The Dean of Social Sciences in University III expanded the dimension of the discussion to show how universities design internal closed systems that ensures academic integrity, validity and reliability of scholarly claims. He argues, *"if you're suggesting that universities are influenced by all sorts of people, I disagree with you. Even within the university itself, we have purely academic issues that are only handled by academics. You can't appoint and promote academics without involving the senate. We have all the procedures for ensuring that every academic publication they present are crossed checked against laid down rules."* The Dean claimed that I suggested "*universities are influenced by all sorts of people"* because he was agitated by my attempt to make him consider the possibility that his university may have been influenced in some ways by 'outsiders' without his knowledge.

The implication of this on IR innovation in the case universities is enormous. For instance, in University I, where there was general lack of IR innovation awareness among senior academics, the attempt by the head librarian to introduce IR innovation to senate was foiled. The head librarian recalls, *"When I tried to explain to Senate they are particularly concerned about the quality of its resources and the fact that the library will be in charge of institutional repository. Some of them were saying (sic), how can we allow the library to become the publisher of our works?"* The underlying belief of members of the senate is that academic issues should be strictly managed by academics. This resulted in a fundamental IR innovation barrier factor in the case universities

eventhough, technically, IR offers universities the opportunity to close up scientific knowledge production and dissemination. This is because it is based mainly on activities done by stakeholders within universities. The production of scholarly works and its dissemination using IR is within the ambit of academics, librarians and IT staff. This shows the kind of 'closeness' they demand but, unfortunately, key stakeholders have not started to see IR innovation from this point of view.

4.5.5 Interrogating Paradox Barrier Factors

Limited Internet Access

Some IR innovation barrier factors that were identified during the course of the study were termed paradox barrier factors because they persisted despite being significant obstacles to the objectives of the case universities. One of these barrier factors is limited Internet access. Limited Internet access is common to the case universities eventhough they claim to invest heavily in Internet connectivity. Complaints made by research subjects about limited access to the Internet were common to the three case universities. In University II, where both staff and students pay mandatory Internet access fees, staff complain that they rarely have access to the Internet. The complaint was made by both academic and non-academic staff of the university. An academic staff in University II revealed that she comes to her office in the night anytime she wants to submit papers to journals and/or conferences through the Internet. "*Me, I (sic) come here in the night if I need to upload my papers.*" The high Internet usage during working hours makes download and upload speeds unbearably slow. This claim was corroborated by an administrative staff who claims that "*…on good days when the Internet is available (sic), you can't even use it because it is very slow.*" The Dean of Social Sciences in University II complains that "*Most times you even forget that you could use the Internet in your office, because it is usually not working. Unfortunately, every month they deduct two thousand five-hundred naira Internet access fees from my salary.*"

Access to the Internet in University II is worsened by the fact that it is situated in a rural area. It is difficult for staff to use self-funded Internet services provided by mobile phone service providers. As a result, staff that stay in the capital city of a neighbouring state that is located about fifty kilometres from the university use the Internet data services of mobile phone service providers only when they are at home.

Issues related to limited Internet access also affect University I and University III. In University I, I observed that students and staff never used the e-library. During a chat with the ICT staff that was put in charge of the e-library, he revealed that "*If Internet access is provided here [e-library] all the time then there will be problem in offices. We don't have enough bandwidth to serve everybody at the same time.*" Most academics in University I complement the Internet access provided by the university with subscription to Internet data services provided by mobile phone service providers. They have the added advantage that University I is situated in an urban centre. The situations in University III are similar to the ones in University I and University II. Staff complain that they mostly use personal Internet services which they buy from mobile phone service providers. It is possible that the ICT unit implemented the deposition policy that requires depositors to submit their papers to the ICT because the Internet connectivity in the university may not support remote deposit into IR. Similar to University I, University III also rations available Internet bandwidth. Consequently, priority areas like the administrative building, ICT offices and facilities, and select areas in the university enjoy Internet connectivity more than other units that are not considered priority areas. Unfortunately, this policy is known only to a privileged few. It follows that the paradox barrier factor, limited Internet access, has adverse effect on IR innovation.

4.5.6 Unreliable Power Supply

A related issue is that of unreliable power supply. University III suffers the most from unreliable power supply compared to University I and University II. I gathered through observation that University I and University II strive to provide power supply to members of their communities during working hours and during the night. For instance, University II provides power supply from 8:00 am to 4:00 pm. Staff are expected to end the work day by 4:30 pm. At night, the university provides power between 7:00 pm and 11:00 pm. The university strives to provide power for twelve hours every day. In University I, because staff residences are not provided for, on the university campus, power supply in the evenings is restricted to student residences between 7:00 pm and 10:00 pm. The university strives to provide power during working hours without any formally laid down specifications. The thought behind prioritizing the provision of power supply during working hours was clarified by the Dean of Sciences in University I. She reveals that

"*...if there is no power supply, people can't work. The university knows this; they will just keep paying people that are not working.*" The same explanation was given by the head librarian in University II "*The University must do something to provide power supply. If they don't how will my people work? How will they catalogue and classify? How will they use facilities on ground?*" In University III, power supply was not as available as it was in University I and University II. Apart from the administrative building, only the library and the ICT unit were provided with power supply throughout a working day. Other units of the university contended with unreliable power supply. Academic and administrative units that are not on the priority area list are encouraged to buy small 2500KV power generators to augment power supply provided by government and the university. Consequently, staff have limited power supply to work with during working hours. Limited power supply also negatively impacts IR innovation in University III as staff who are not used to working with the Internet in their offices seldom remember IR innovation even when they are aware of it. In times when they have access to the Internet, they are mainly engaged in looking for information and rarely think to add to the information on the Internet. This is because, over time, they have developed the habit of using available power supply to download what they need for their research and not to upload papers to IR or other information for official purposes. Similar observations were made in University I as it's power supply routines are similar to those of University III.

4.5.7 Paucity of Research Funds

The third paradox barrier factor that was observed during the course of this study is paucity of research funds. Although there are no universities that fully provide for research needs, the situations in the case universities are considered paradoxical because they stand against the universities' objectives and claims. University I, for instance, did not make any funds available for research funding. However, it provides travel funds for those who are interested in attending training and conferences abroad. During the course of this study, it was revealed that only three of its staff have benefited from the travel funds since it was instituted about six years before this research was conducted. Hence, there is no formal provision for funding academic travels as claimed by the university. In University II, research funds are derived from revenue made through tuition fees and

service fees paid by students. The university does not have other external sources of research funds. While the religious body that owns it provides funds for expenses related to infrastructural development and augments money available to pay salaries, it does not provide funds for research, scholarship and academic travels. This limits the amount that the university could make available to academics for research and travels. Although the university did not see as such, insufficient funds stand as a barrier to IR innovation barrier by limiting the number of research done in the university and, as a result, the number of papers that could be produced and deposited in IR. This scenario is similar to that of University III. The research productivity of University III is poor which is unsurprising considering that only a few staff have benefited from research funds made available by government through TET Fund. Most research being done by academics in the university are supported by personal funds. This results in research studies that are low in quality, incomplete and/or delayed in timeline. Inadequate research funds has multiple detrimental effects on IR innovation because it demoralizes academics and renders the research environment unproductive. Consequently, it denies the case universities the opportunity to implement mandatory deposition of research outcomes to IR. This also prolongs the lack of local contents in the Internet, making it developed country-centric.

4.6 Theoretical Elaboration of Study Two Findings

4.6.1 Institutional Logics: Social, Commercial and Hybrid Institutions

The institutional logics adopted by any organization determine how it sees things and the set of assumptions that drives the decisions it makes (Friedland & Alford, 1991). Thornton & Ocasio (2008) argue that institutional logics are "*socially constructed historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material substance, organize time and space, and produce meaning to their social reality (p. 804).*" This points to the existence of three types of institutional logics, namely, social, commercial and hybrid institutional logics (Grendler, 2004). Over the years, the assumption that universities are social institutions has been challenged by several social transformations. These social transformations are informed by policies that enable private and religious organizations,

governmental organizations, as well as individuals and governments to influence the activities within universities (Akalu, 2014; Erinosho, 2013/2014; McDowell, 2007; European Commission, 2005). The transformation of universities also culminated into a shift in their ownership structure. The allowance of individuals and non-governmental organizations to own universities challenged the traditional belief that universities are to run with social institutional logics (Wit, 2015; Lozano, Lukman, Lozano & Huisingh, 2013; Okebukola, 2015; 2006). It resulted in the commercialization of degrees, research, as well as teaching and learning in universities (Okebukola, 2015; Akalu, 2014; Nielsen, 2014).

These transformations brought about studies that identified the likely existence of three kinds of universities namely, universities that run with social institutional logics, those that run with commercial institutional logics and those that run with hybrid institutional logics-a combination of commercial and social institutional logics (Brint & Carr, 2017; Fochler, 2016; Rothaermel, Agung & jiang, 2007; Evers, 2005; Owen-Smith, 2003). In reality however, there is no university that runs with a single institutional logic (Brint & Carr, 2017; Bruns, 2013, Jay, 2013; Thornton & Ocasio, 1999). The observation was corroborated in this study as both privately and publicly owned universities that were studied adopted hybrid institutional logics to socially construct the realities of IR innovation. Understanding the institutional logics that drive universities allows stakeholders to be aware of and understand the forces behind their decision choices. Consequently, by assessing the role of institutional logics in IR innovation, this study reveals the social forces behind the decision choices of the three case universities with regards to IR innovation. Several decisions made either directly or indirectly with regards to IR innovation were determined by the institutional logics in the case universities that underlie the decision(s) in question. Ordinarily, these decisions would have been seen as normal and natural if they were not interrogated vis-à-vis institutional logics (Johanson & Vikkuri, 2017; Thronton, 2004; Owen-Smith, 2003).

By interpreting the factors that motivate the decisions taken by the case universities with the institutional logics that inform them, it exposes wider social factors that inform how they socially construct IR innovation realities. For instance, as a public university that assumedly runs with social institutional logics, University III's IR

innovation objectives was expected to be driven by the need to use IR innovation to meet social services and needs. Conversely, the university's IR innovation objective is driven by the need to gain prestige and, in effect, secure legitimacy and economic benefits through grants (Ezema, 2013; Nwagwu, 2013; Broody & Harnad, 2005; Chan & Costa, 2005; Crow, 2002). The university got involved in IR innovation with the aim to become visible and garner enough prestige to become an internationally acclaimed university (Asogwa & Ugwashiuwu, 2016; Okebukola, 2013). The university assumed that IR innovation would improve the possibility for it and its academic staff to collaborate with scholars 'abroad.' It was assumed that IR will facilitate research collaborations with international scholars in the West where the prospects to access tangible research grants are high (Altbach, *et al.*, 2011). It was also assumed that IR would enable the university and its academic staff to have name recognition in international circles (Asogwa & Ugwuishiwu, 2016; Okebukola, 2011; Stromquist, 2007).

University III was motivated to adopt IR innovation by the NUC's proclamation of the benefits of IR innovation to Nigerian universities and academics. The NUC's push for Nigerian universities to strive to become internationally acclaimed was driven by the FGN requirement that funds expended on Nigerian universities should be justified by their competitiveness in global ranking of universities (Okebukola, 2011; Amuwo, 2000; CRHEN, 1991). The FGN's position was inspired by ideas propagated by UNESCO, World Bank and the UN over successive meetings on the topic of university education in developing countries (Jones, 2007; Birdsall, 1996). The sequence of events led to conflicting institutional logics and goal incongruence as the FGN also ensures that University III retains most of its social institutional logics which, unfortunately, did not positively influence IR innovation. The FGN ensures that University III promotes its tradition of tuition-free university education.

The extant literature on institutional logics suggest that the market (global university and industrial landscapes), the corporation (University III itself), the state (FGN and its regulatory frameworks which include the NUC), the professions (academics) and community (the combination of these stakeholders within defined social set ups) combine to influence the factors that determine IR innovation in University III (Thronton, *et al.,* 2012; Thornton, 2004). Surprisingly, the social institutional logics that

University III primarily implements did not encourage it to set IR innovation objectives that entail using IR to distribute the local development information (Ukwoma & Moles, 2017; Ezema, 2013).

University III experiences goal incongruence because its socially constructed realities of IR innovation also push for the implementation of commercial institutional logics. The social forces that drive IR innovation in University III are, therefore, informed by hybrid institutional logics. Hybrid organization has been defined as an organization with goal incongruence and conflicting institutional logics due to the variety of financing sources and different forms of economic and social control (Brint & Carr, 2017; Johanson & Vakkuri, 2017; Fochler, 2016). To manage financial challenges, University III adopts commercial institutional logics by creating a variety of sources for internally generated revenue. Unfortunately, the university did not see IR innovation as a technology that directly fits into its commercialization programs. Using IR to gain visibility and prestige and, consequently, gain research collaboration and funds seems to align with the university's commercial objectives. The university, however, had taken for granted that IR innovation cannot support its commercialization program. Academics who were interested in IR innovation because they could derive research collaboration and funds through it did not also see the connection between their objectives and economic gain. This reveals that organizations could operate without paying attention to the impact of the institutional logics they use to construct the realities that guide their actions.

The FGN supports the goal of using IR to garner prestige, research collaboration and funds more than it does the goal of using IR innovation to support the distribution of local development information. This scenario aligns with the idea that organizations confront the challenges of goal incongruence as a result of different forms of economic and social pressures that emanate from stakeholders (Brint & Carr, 2017; Fochler, 2016; Jay, 2013; Thornton, *et al.*, 2012). Another related example in University III is that all the paper based journals published in the university operate as closed accessed journals. Each journal stipulates authors' fees to be paid by authors before their articles are published. While this is not problematic, the university's lack of plans to deposit the articles, once published, as post prints in the IR is problematic. It hinders the university's

IR from serving as a further distribution point for the articles published in the journals, given that the journals are traditional closed access journals (De Lange, 2011; Lamont, 2009; Simon & Mahan, 1969).

University I and University II, being privately owned universities that assumedly run with commercial institutional logics, also have similar experiences that depict them as hybrid organizations. The fact that IR innovation advocates for free distribution of scientific knowledge negatively impacted their willingness to promote it (Kim, 2010; Ferreira, *et al.,* 2008; Davis & Connolly, 2007; Crow, 2002). University I and University II would have embarked on IR innovation projects if it was seen as a technology that could promote their commercialization goals and to meet accreditation requirements (Akalu, 2014; Okebukola, 2009; Smith, *et al.,* 2003). Despite adopting the dominant logic of commercial institutions, University I and University II were involved in programs that would have benefited from the interpretation of IR innovation realities with social institutional logics (Utulu & Akadri, 2014; Nwagwu, 2013; Ghosh & Das, 2007; Chan & Costa, 2005). The two universities provide funds to academics to support research studies that investigate local problems. The rationale that supports the provision of funds for research studies hinges on promoting the legitimacy of the universities (Saeidi, *et al.,* 2015; Carroll. 1991; Aupperle, Carroll & Hatfield, 1985). They, however, did not see IR as a viable tool to distribute the outcomes of these studies and thereby support development. Disappointingly, in their inability to perceive the potential role of IR innovation in the promotion of institutional legitimacy, the universities worked against IR innovation. The ways the legitimacy of the two privately owned universities was interpreted vis-à-vis IR innovation did not make them see the importance of IR innovation to the achievement of legitimacy. Although the linkage between access to development information and the rate of development of contemporary society is becoming stronger (Machlup, 2014; Opoku-Mensah, 2007; Powell & Snellman, 2004), key stakeholders in Nigeria have not started to use the extent to which universities support development with scientific knowledge to determined their legitimacy.

The above observations reveal that the universities have taken for granted that IR cannot be used to promote their commercialization and legitimacy. It corroborates persisting assumptions about the benefits of IR in the extant literature which often do not

include its potential to promote development (Zaid & Okiki, 2014; Oduwole, 2013; Wyk & Mostert, 2011). Major studies in developing countries, particularly those done in Nigeria, suggest that IR innovation is primarily useful for promoting the visibility and prestige of universities (Utulu & Akadri, 2014; Zaid & Okiki, 2014; Oduwole, 2013). Those that propose that it is a technology that has the potential to promote the distribution of development information did not explain how this can be achieved and how current assumptions hamper this (Ukwoma & Mole, 2017; Ezema, 2013; Nwagwu, 2013; Oduwole, 2013). Experience gained during the study shows the adoption of hybrid institutional logics by the case universities has major impact on the ways they socially construct IR innovation benefits. The implementation of institutional logics by the case universities were influenced by the voices of dominant stakeholders in the Nigerian academic landscape. The dominant stakeholders determined the evolution and interpretation of each institutional logic. This puts into questioning certain belief systems about IS innovation. There are belief systems that make stakeholders to think that understanding both internal and external factors is enough to expose the wide range of factors that influence IS innovation (Sahay & Mukherjee, 2015; Avgerou, 2013; Lyttinen & Newman, 2008). Given that institutional logics influence the way organizations view IS innovation, identifying how they evolve and how their interpretations are derived is imperative. As shown in this study, the IR innovation objectives set by the case universities were determined by the institutional logics promoted primarily by the FGN and NUC. Following the findings of this study and insights in the extant literature:

> *Proposition I: Institutional logics are likely to constitute IR innovation barrier factors in universities in Nigeria (and other developing country contexts).*

4.6.2 Adherence to Traditional University Management Orientation

University as Closed System and the Gown and Town Philosophy

The nature of universities has become controversial in the recent past. If the historical antecedents related to the evolution of universities and their freedom from external influences are compared with the current realities, it becomes clear that universities have greatly transformed. It is this transformation that seems to be

controversial to universities as it accommodates practices that were considered inappropriate in the past (Guerrero, *et al.*, 2015; Yonezawa & Shimmi, 2015). Despite clamour for autonomy, the evolution of governments, private organizations and individuals as owners of universities has transformed the way universities operate, (Altbach, 2015; Akalu, 2014). The autonomy of universities has been extensively discussed in the extant literature from both the dimension of government incursion and influence of funding agencies on research trends and outcomes (Akalu, 2014; Nielsen, 2014). Nevertheless, universities still harbour the belief that allowing external stakeholders to influence their decision-making is an aberration. In other words, they still hold on to some assumptions of closed systems when interpreting phenomena surrounding their daily realities. In the organization sciences, organizations are seen as either closed or open systems (Scott & Davis, 2015). The use of the term 'closed' indicates that the system is built not to accommodate influences from entities external to it. Conversely, open systems are built to accommodate influences from outside entities (Kuhl, 2017; Scott & Davis, 2015).

Scholarly publishing is one of the areas universities try to defend from external incursion using closed systems and gown and town assumptions (Gavazzi, *et al.* 2014; Bruning, *et al.*, 2006; Baker-Minkel, *et al.*,2004). It is designed as a phenomenon that has to do only with academics (Murray, 2013). The collaboration between universities and commercial publishers in the production of scientific knowledge is not seen as a practice that opposes the closed system and gown and town philosophies. This is irrespective of the agitation by academics against commercial publishers that resulted in the evolution of the open access initiative (Lynch, 2003; Crow, 2002; Harnad, 2001). Major stakeholders still believe that the traditional scholarly publishing model ensures that universities are in full control of scholarly publishing. This assumption encourages stakeholders to continue to ignore the positions put forward by the promoters of the open access initiative (e.g. Crow, 2002). The IR innovation literature has concerned itself with propagating an understanding of the working of traditional publishing model against the closed system and gown and town philosophies. It has argued that commercial publishers determine scientific knowledge production and the universities that are likely to have access to them (Utulu & Akadri, 2014; Oduwole, 2013; Wyk & Mostert, 2011; Palmer, *et*

al., 2008; Westell, 2006).

Surprisingly, the IR innovation philosophy that is built around stakeholders within universities has not been fully accepted. Given that it endorses the self-distribution of universities' intellectual property, it more fully suits the idea that universities are closed systems and the assumptions that promote the gown and town notion (Lynch, 2003; Davis & Connolly, 2007). Unfortunately, the traditional philosophy of university management orientation which sees universities as closed systems have not been used to conceptualize IR innovation. It appears that the idea that universities are closed systems, therefore, points to the inclination of stakeholders within them to think that occurrences within universities are solely determined by factors within the universities. For instance, all the research subjects in this study share the belief that IR innovation barrier factors are inherent within the case universities. They believed that IR innovation stakeholders are limited to university management, academics, librarians, administrative staff and ICT staff. Hence, when attempting to identify IR innovation challenges, they often identify those challenges that are connected to the groups of stakeholders that are considered to be IR innovation stakeholders. They neglect the role of the ideas about IR innovation that they derive from outside sources such as conferences, workshops and trainings organized by other organizations. While this indicates that the extant literature on IR innovation is built on the assumption that all IR innovation stakeholders are consociates, it opens up room to question the appropriateness of ideas used to socially shape IR innovation. There are two important lessons that IS researchers and practitioners can learn from this study. First, the study shows that the nature of universities and assumptions that drive them can come to bear in IS innovation. There are a few studies that assessed technology innovation in universities that did not consider issues relating to the closed system and gown and town philosophies (Ayoubi & Khalifa, 2015; Eze, *et al.*, 2013; Vasileiou, *et al.*, 2012; Ehikhamenor, 2003). Secondly, this study informs IS scholars and practitioners who are interested in understanding the role of institutional factors on IS innovation in organizations (Marabelli & Galliers, 2017; Linderoth, 2014; Ghaffarian, 2011; Jones & Karsten, 2008). It shows that attention should be paid not only to the type of institutional factors that are identified but, more importantly, also on how stakeholders interpret institutional factors vis-à-vis IS innovation. This implies that there are gaps in existing IS

studies. Based on the extant literature and findings from my experiences with the case universities:

> *Proposition II: Assumptions that universities are closed and separate from organizations and individuals outside them are likely to constitute IR innovation barrier factors in universities in Nigeria (and other developing countries).*

Traditional Scholarly Publishing Model

The third variable that was identified as the way adherence to traditional university management orientation impacts IR innovation in the case universities is adherence to traditional scholarly publishing model. It could be said that the primary objective of universities is the production and propagation of scientific knowledge. Universities take pride in this social responsibility and have used everything at their disposal to protect the integrity of the processes that culminate in the production and distribution of scientific knowledge (Abrizah, *et al.*, 2010; Arnold, 2009; Russel, 2008). The collaboration between universities and commercial publishers in the traditional scholarly publishing model has been well spelt out. There are about six factors that make up the life cycle of scholarly publishing namely, creation, registration, verification, certification, production and dissemination. Academics handle three of these roles namely, creation, verification and certification whereas commercial publishers handle registration, production and dissemination (Utulu & Akadri, 2014; Russel, 2008; Pöschl, 2004). It is important to note that, from a historial context, these six roles of scholarly publishing were introduced at different stages of the evolution of scholarly publishing. For instance, it is recorded in the extant literature that the history of scholarly publishing can be traced back to the hand-written letters academics shared among themselves as a way to inform one another about new research findings (Townsend, 2003). This act evolved into more sophisticated approaches, the latest of which is the electronic journal publication system (Peek & Newby, 1996). Hence, when the open access initiative was born, its proponents agitated about the limitations that plague the traditional closed access publishing system (Harnad & Broody, 2004; Crow, 2002; Harnad, 2001).

Scholars felt that commercial publishers are ripping-off universities and other users of scientific knowledge because of the cost of acquiring scientific knowledge. Still,

the system remains because universities believe that the traditional closed access publishing model ensures quality scientific knowledge production and dissemination. To universities, the open access publishing model, compared to the traditional publishing model, leaves a lot of unanswered questions about the quality and integrity of the publications (Yiotis, 2013; Solomon & Björk, 2012; Björk, 2004). Hence, while accessibility of knowledge was the primary motivating factor behind open access publishing, it was seen to fall short of the rigorous procedures used for producing scientific knowledge when compared to the traditional closed access publishing model (Abrizah, *et al.*,2010; Palmer *et al.,* 2008; Howcroft, 2004). The fact that the major functions of IR revolve around creation, production and dissemination of scientific knowledge led stakeholders whose assumptions are shaped by the traditional model to question its validity. In IR innovation, the creation of scientific knowledge was expectedly left in the hands of academics whereas production and dissemination are left in the hands of librarians with the technical support of IT staff (Utulu & Akadri, 2014; Palmer *et al.,* 2008; Crow, 2002). However, because two major aspects of traditional scholarly publishing, namely, verification and certification, were not incorporated into IR innovation, academics became sceptical about its viability as a scholarly publishing model (Abrizah, *et al.,* 2010; Utulu & Akadri, 2014; Davis & Connolly, 2007).

Academics involve in scholarly publishing in order to extend the frontiers of knowledge and, traditionally, they have laid down reward systems that are tied to scholarly publishing (Abrizah, *et al.,* 2010; Davis & Connolly, 2007). Rewards attributed to scholarly publishing include appointment, tenure and promotion of academics. Furthermore, academics are also ranked based on parameters such as high-impact factor, citation counts and publication counts. Given that all of these are attached to traditional scholarly publishing, they are also used to assess the extent to which IR innovation can be accorded the status of a scholarly publishing outlet. The implication of this is that for any proposed social change, particularly IS based change, it is necessary to assess and understand all the factors that motivate it. It is also important to understand the socio-cultural, economic and political factors upon which the old perspective which is to be changed is based. The findings in this study show that IR innovation was unsuccessful in the case universities as a result of the socio-cultural, economic, political

and technological perspective upon which it is based. This is not to say that the perspectives were wrong, but rather that they are radically different from the model upon which traditional scholarly publishing is based (Utulu & Akadri, 2014; Abrizah, *et al.*, 2010; Davis & Connolly, 2007).

Stakeholders, therefore, need to understand both the old and new perspectives in order for them to appropriately assess how to initiate IS driven change. In the past, literature on IS driven change has focused on stakeholders' attention to understanding social contexts and how the new IS fits (Sahay & Mukherjee, 2015; Lyttinen & Newman, 2008). Very little is said about understanding the social, economic and political forces that promote the popularity of an existing IS that is considered for change as done in this study. This has implications on IS studies that assess the role of IS-organization fit in IS innovation. Most IS studies that look at IS-organization fit assess the fit from operational perspectives. This study shows the need for a second IS-organization fit perspective, namely, a socio-cultural perspective. There is no doubt that IS carries some cultural assumptions (Avgerou, 2010; Heeks, 2010). If this notion is anything to go by, it then follows that the revelation in this study about the impact of the fit between IR and traditional university management orientations on IR innovation should be taken as an important factor by both practitioners and scholars. In the case universities, academics were sceptical about the quality of IR materials because the process by which they are produced do not match their assumptions about what constitutes appropriate scholarly knowledge production. The social, economic and political factors that promote the continuous adherence to traditional publishing model also promoted this scepticism. These background social, economic and political factors revolve around the reward systems that are attached to traditional publishing model but which those participating in IR innovation cannot enjoy. Based on insights from the extant literature and those derived from this research:

> *Proposition III: Adherence to traditional scholarly publishing model by universities in Nigeria is likely to impede IR innovation.*

4.6.3 Paradox Barrier Factors

A popular argument in the ISDC literature is that IS projects in developing countries do

not often reach the objectives set for them due to socio-cultural, political and economic conditions within them (Avgerou, 2010; Walsham & Sahay, 2006). These conditions that hamper IS innovation manifest in the form of poverty, dearth of knowledge required for IS innovation and unfavourable business environment, among others (Avgerou, 2010; 2008; Heeks, 2010). Three barriers of IR innovation are uncovered in the case universities that are linked to the above claims about traditional IS innovation barriers in developing country. The barriers are limited Internet access, unreliable power supply, and inadequate research funds (Akalu, 2014; Ehikhamenor, 2003; Amuwo, 2000). Past analysis of business environments in developing countries show that they are charactierized by power supply inadequacy, limited access to funds, transportation problems and generally poor socio-physical and technological conditions (Lechman, 2015; Khavul & Bruton, 2013). It follows that the business environments in developing countries stifle universities within them as they attempt to engage in IR innovation (Utulu & Akadri, 2014; Oduwole, 2013; Ghosh & Das, 2007). That is, the economic, socio-cultural, socio-physical and technological conditions of the case universities are poor as a result of the Nigerian business/scholarly landscape (Okebukola, 2015; Osagie, 2009; Ehikhamenor, 2003; Amuwo, 2000; Banjo, 1997; Sanda, 1992). These conditions are experienced in the case universities irrespective of whether they are privately or publicly owned.

The paradox factors identified in this study were so termed because they persist irrespective of the high performance bars that the owners of the case universities set. The owners of the case universities, having set the goal to become internationally acclaimed universities, did not provide the necessary resources (Altbach, 2015; Okebukola, 2015; Amadi, 2011; Sanda, 1992). For instance, the government did not provide the resources required to meet the research needs of University III despite tasking academics to do high quality research and publish them in high quality journals. It also tasks the university to compete meaningfully in the global ranking of universities against other better funded internationally acclaimed universities. This has been an age long problem in the Nigerian university system (Okebukola, 2015; Erinosho, 2013/2014; Osagie, 2009; Amuwo, 2000; Sanda, 1991; Banjo, 1997; NUC, 1983). The advent of the privately owned university was expected to be a solution to this problem (Amadi, 2011; Osagie, 2009; Owolabi,

2000). Conditions in the two privately owned case universities, however, were not different from those in the publicly owned case university. The missions set for the two privately owned universities are similar to the missions set for the publicly owned university that was studied (Okebukola, 2015; Ajadi, 2010; Akpotu & Akpochafo, 2009). The owners of the two private universities also seek international recognition for their research and innovation to launch themselves into international circles. This objective, however, was not supported with resources as the universities struggled with limited Internet access and power supply. The universities rationed Internet access and power supply to academic and other units according to the value and priority placed on them suggesting that some units were considered more important than others. This indicates that the identified paradox barrier factors are socially constructed. The problem of Internet access and power supply in developing countries has been reported in the extant literature (Dada, 2006). The relationship between Internet access and power supply, and research productivity of academics has also been reported (Duque, *et al.,* 2005; Ehikhamenor, 2003). These studies, however, did not elucidate to stakeholders that the identified problems were socially constructed.

In any society, Internet access is tied to bandwidth availability and infrastructure put in place by the government in collaboration with private organizations. Even though the Internet infrastructure in Nigeria was put in place by the government and the private sector and can be described as fairly competitive (Dada, 2006), the privately owned case universities lack the resources required to provide adequate Internet infrastructure and connectivity within their campuses (Okebukola, 2015; Zhen-Wei Qiang, 2010; Petrazzini & Kibati, 1999). The problem of Internet access and power supply in developing countries has also been well researched in the ISDC discipline (Bulman & Fairlie, 2016; Wallsten, 2005; Petrazzini & Kibati, 1999). However, as in other contexts, these studies did not discuss the factors that impact how organizations in developing countries think about addressing issues of Internet access in light of this challenge. In this study, the case universities' social construct around Internet access was a fundamental problem to IR innovation. For instance, the commercial Internet café established by University III was given priority access to power supply and more Internet bandwidth because the costs of these resources were covered by the user fees. Such scenarios indicate that shortages in

power supply and Internet access are socially constructed, that is, they are man-made. In the two privately owned universities, areas which are considered important to the achievement of the universities core missions were made priority areas for Internet access and power supply. These core missions revolve around meeting NUC requirements irrespective of the fact that the requirements may not be directly connected to commercial gains. The case universities used both cost-benefit and social requirement approaches to determine the distribution of power supply and Internet access. This corroborates claims in the extant literature that the Internet should be treated as both economic resource and social amenity in developing countries (Guo, *et al.,* 2007; Kiiski & Polijola, 2002). Findings of this study show that assumptions of the Internet as either economic resources or social amenity are socially constructed.

The implication of this to ISDC scholarship is fundamental. In the past, ISDC scholars only identified socio-economic and political factors that hamper IS innovation (Leachman, 2014; Braa, *et al.*,2007a; Dada, 2006; Heeks, 2002). They, however, did not look at the role of stakeholders in socially constructing these challenges. It is observed that social contructs determined the emergence of the paradox factors identified in this study. Hence, IS scholars and practitioners should pay attention to the stakeholders' socially constructed realities and IS implementation realities that are peculiar to developing countries. In the case universities, the socially constructed everyday life realities surrounding IR innovation determined the paradox barrier factors, i.e., inadequate Internet access, unreliable power supply and inadequate research funds, all of which impede IR innovation. Consequently, given the revelation in the extant literature and the insights gained in the empirical contexts of this study, I put forth that:

> *Proposition IV: Paradox barrier factors are likely to constitute IR innovation barrier factors in universities in developing countries.*

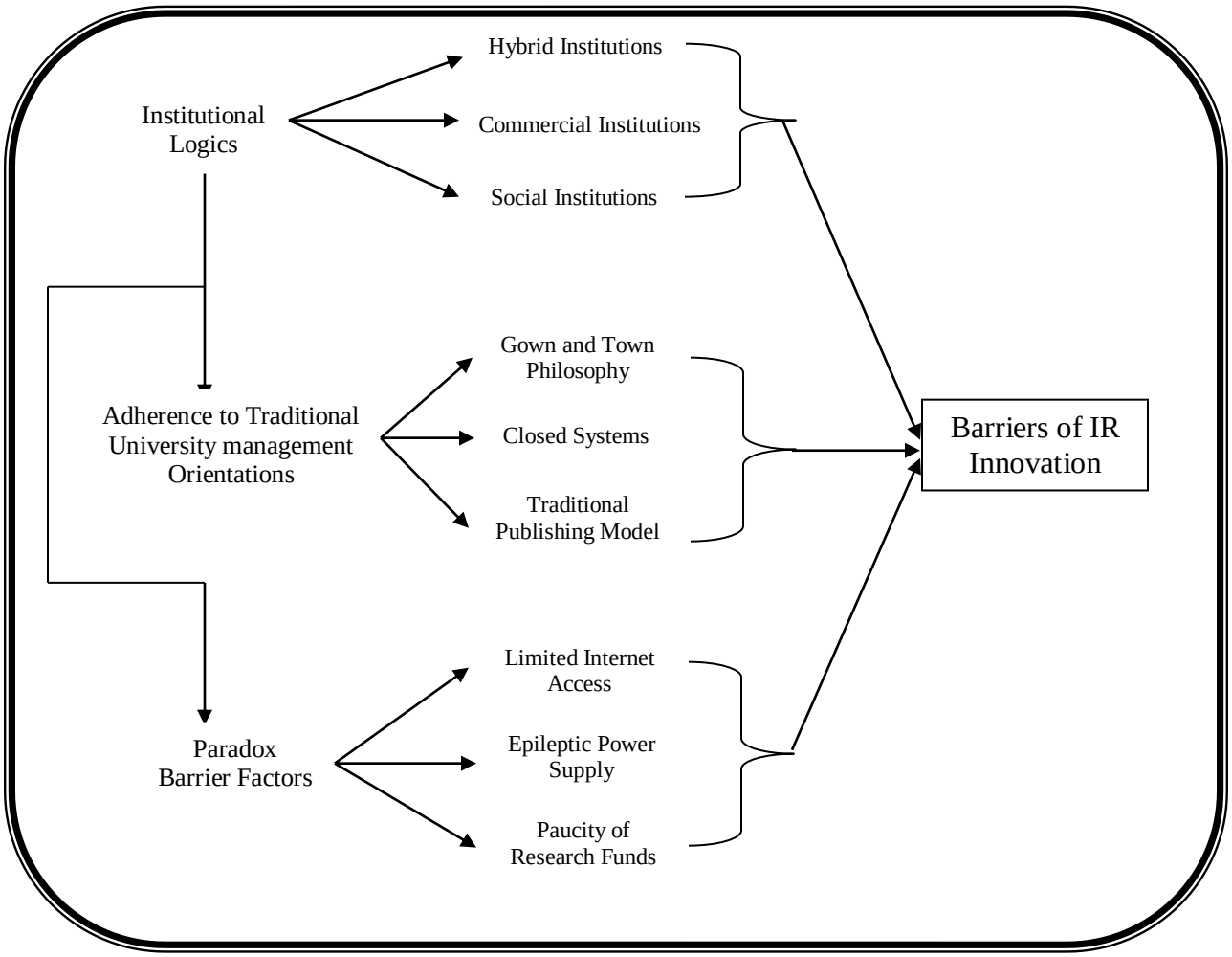


Figure 4.1: Dynamics of IR Innovation Barrier Factors at Organizational Level

4.7 Conclusion to Study Two

This study was devoted to assessing factors that determined IR innovation at organizational level in universities in developing country contexts using examples from Nigeria. It was infomed by the following research question: how do activities of individuals and organizations outside university contexts constitute barrier to IR innovation in Nigeria? It identified institutional logics as a primary factor in IR innovation in developing countries. It also identified the role of government, government agencies, organizations and individuals that are not part of university communities in determining how institutional logics evolve and in effect, impact IR innovation. Given that the thinking of IR innovation stakeholders were determined by the institutional logics that the universities adopt, institutional logics then become a primary determinant of IR

innovation. Institutional logics promoted the emergence of paradox factors and how they were interpreted by stakeholders in the case universities. They also ensured that the case universities adhered to traditional university management orientations and maintained the belief that universities are closed systems where the gown and town philosophy prevails. The paradox barrier factors including inadequate Internet access, unreliable power supply and inadequate research funds were socially constructed as a result of other needs the case universities are required to meet. Invariably, these needs were determined by the institutional logics used to interpret realities linked to the needs. This study identifies several factors that impact IR innovation in universities in developing countries. It links IR innovation to conflicting institutional logics, goal incongruence, and pressures coming from within and outside universities. The revelations in the study extend insights available in the IS implementation discipline about the array of factors that impact IS innovation at the organizational level. The study offers explanations for how factors at the organizational level may promote factors at the individual level. Both Study 1 and Study 2 show that institutional and organizational factors determine stakeholders' views (tacit knowledge) about IR innovation. They show that stakeholders in the case universities are conditioned by factors inherent at both instutional and organizational levels. The findings in Study 1 and Study 2 provide the basis for explaining the evolution of tacit knowledge and how it can be managed as specified in Chapter 5.

Chapter 5: Empirical Study 3

Individual Level Assessment

Framework for Implementing Effective Tacit Knowledge Management in IS Innovation

Abstract

This study was carried out to propose a framework for implementing effective tacit knowledge management during IS innovation. It was based on the revelation of the important role of tacit knowledge in IS innovation at the individual level. The study was conducted in the context of IR innovation, IR being a type of IS used to promote open access to scientific knowledge. It adopts the inductive interpretive research approach. Qualitative data were collected through participatory observation and unstructured in-depth interview. Data collected were analyzed using thematic data analysis technique. Data analyses show that there are two types of IR innovation tacit knowledge held by research subjects namely, discrete and shared IR innovation tacit knowledge. The study shows that discrete IR Innovation tacit knowledge is of two kinds: low-order and high-order IR innovation tacit knowledge, while shared IR innovation tacit knowledge is also of two kinds: collective and common-sense IR innovation tacit knowledge. The study reveals that effective tacit knowledge management can aid the transformation of discrete to shared IR innovation tacit knowledge and in effect, promote IR innovation. The study develops a model that explicates how effective tacit knowledge management can be done to support IS innovation. It contributes to the disciplines of IS implementation, ISDC and knowledge management.

Key words: Tacit Knowledge Management, Institutional Repository, IS Implementation; Information Systems in developing countries, Knowledge Management; Common-Sense

It is not the mountain we conquer but ourselves-Edmund Hilary

5.1 Introduction

The role of tacit knowledge management in IS innovation has not received adequate attention in spite of the importance of knowledge management to contemporary organizations with diverse stakeholders involved in the process. Tacit knowledge has been defined as the kind of knowledge that is idiosyncratic and not codified; it is stored in human cognition (mind) and acted upon without reflection (Argyris, 1995; Nonaka & Takeuchi, 1995; Schutz & Luckmann, 1989; Polanyi, 1969). As an IS, IR innovation is impacted by social experiences and professional affiliations of those involved (Abrizah, *et al.,* 2010; Palmer, *et al.,* 2008). This suggests that IR innovation is likely to be impacted by differences in the tacit knowledge held by stakeholders. A growing body of literature on the importance of knowledge management to successful IS implementation also points to the possible role of tacit knowledge management in IR innovation (Gasston & Halloran, 1999). If revelations available in the extant literature on the role of knowledge management in IS innovation is anything go by, the need to develop a framework for effective tacit knowledge management to aid IR innovation cannot be over-emphasized (Halloran, 2008; Schultze & Leidner, 2002). This call is also corroborated by the consensus reached by scholars in the knowledge management discipline about the fundamental role of tacit knowledge in innovation within organizations (Venkitachalam & Busch, 2012). In recognition of the importance of tacit knowledge, Lam (2000) proposed two types of tacit knowledge, namely, embodied and embedded tacit knowledge, that promote innovation in organizations. Shamsie & Mannor (2013) also identify and propose two types of tacit knowledge, namely, discrete and collective tacit knowledge, that support organizational performance. Despite these propositions, there is no framework for tacit knowledge management that can be referenced by stakeholders during IS innovation. Such a framework is necessary as decisions taken in real-time during IS innovation are mainly spontaneous and tacit knowledge based (Light & Howcroft, 2010; Hansen, Rose & TjøRnehøJ, 2004).

Empirical data collected during this study through in-depth interviews and participatory observation show that any meaningful endeavour to create a framework for tacit knowledge management must address four kinds of tacit knowledge, namely, low

order, high order, collective and common sense tacit knowledge. In this study, tacit knowledge is believed to be in the form of ideas about events or phenomena. Such ideas are contained in individuals' minds. This study reveals that these ideas exist in four different forms. First, ideas at a point where they cannot be articulated by those concerned are low-order tacit knowledge. Second, ideas at a point where they can be articulated, that is, can be described by the person who holds them in his/her mind are high-order tacit knowledge. Third, ideas at a point where the ideas have uniform meaning among members of a group given that they have been articulated (discussed) among themselves are collective tacit knowledge. Fourth, ideas that have been taken-for-granted at group level, have become the norm and are enacted by members of the group without questioning are common-sense tacit knowledge. For tacit knowledge to be considered shared, there must be uniformity in the way the people concerned view, describe and discuss the ideas contained in it. Hence, both collective and common-sense tacit knowledge are categories of shared tacit knowledge. The difference between the two as identified in this study is that collective tacit knowledge holds ideas that have not been taken-for-granted, while common-sense holds ideas that have been taken-for-granted.

This study reports empirical evaluation conducted with the aim to develop a framework for effective tacit knowledge management in IS innovation. It draws examples from three universities in Nigeria and shows that effective tacit knowledge management comprises four elements (processes). The elements are: (1) identifying and understanding how individuals come about the ideas (tacit knowledge) they espouse; (2) identifying and understanding the processes through which the ideas move from the point where they cannot be articulated to the point where they can be articulated; (3) Initiating planned interactions and dialogues to promote the discussion of the ideas at group level; (4) Initiating sustained real-time enactment of the ideas in order to promote collective negotiation of meanings that are taken-for-granted over time. The study explains how the four kinds of tacit knowledge and four elements of tacit knowledge creation constitute the core of tacit knowledge management in organizations. It shows that lack of understanding of the processes required to transform low-order to common-sense IR innovation tacit knowledge during IR innovation results in ineffective IR innovation tacit

knowledge management. This study provides answer to the following research question: *How should the tacit knowledge of relevant stakeholders be managed to positively impact IR innovation in Nigerian universities?*

5.2 Literature Review

In most cases, IR innovation in universities does not involve the building of an IS artefact. Rather, it involves the innovation of already available open source IS artefact (e.g. DSpace, Eprint, and Fedora) to promote open access to a university's intellectual property (Ifijeh, 2014; Wyk & Mostert, 2011; Harnad & Broody, 2004). IR innovation involves readying a university to adopt open access initiative to manage its intellectual property so that its community, immediate society and the global community can have free access to them (Penfield, 2015; Utulu & Akadri, 2014; Shearer, 2013). Given that commercial publishers were solely responsible for scholarly knowledge publishing in the past, IR innovation also involves building stakeholders' perception about the viability and validity of IR (Palmer, *et al.,* 2008; Davis & Connolly, 2007). This implies that IR innovation entails persuading stakeholders of the benefits the global community would gain if universities assume the responsibilities of registering, verifying, certifying and disseminating scientific knowledge free of charge (Zaid & Okiki, 2014; Kim, 2010; & Broody & Harnad, 2005). It also entails clarifying to stakeholders the role of academic libraries in IR innovation and its positive implications for the struggle to break the monopoly currently enjoyed by commercial publishers (Penfield, 2015; Oduwole, 2013; Abrizah, *et al.,* 2010; Bosch & Harnad, 2005; Lynch, 2003). The innovation of IR, therefore, touches two fundamental issues that require effective tacit knowledge management: the reinvention of how stakeholders view scholarly publishing and the need to create common views (shared tacit knowledge) among stakeholders on why IR innovation is fundamental to the advancement of scientific knowledge distribution.

Given the nature of IR innovation, effective tacit knowledge management is required to unify the views of librarians, academics, administrators, IT personnel and a host of other stakeholders on IR innovation (Utulu & Akadri, 2014; Kim, 2010; Davis & Connolly, 2007). Effective tacit knowledge management offers the opportunity to avoid conflicts that hamper successful IR innovation. For instance, academic librarians persistently struggle to convince faculty of their ability to appropriately manage scientific

knowledge using IR. They also struggle to convince other stakeholders who see scholarly knowledge management from traditional perspectives that they can effectively manage IR such that current challenges of scientific knowledge distribution are alleviated (Oduwole, 2013; Wyk & Mostert, 2011; Broody & Harnad, 2005). Current experiences show that successful IR innovation requires entire university communities to develop collective understanding of the rewards of IR innovation, its impact on traditional practices and its overall implications for universities. This is necessary for the collective acceptance of IR innovation as a viable and valid way for distributing scientific knowledge (Pinfield, *et al.,* 2014; Oduwole, 2013).

At the centre of the conflicting views that blocks IR innovation in universities, particularly those in developing countries, is knowledge management. A close look at the conflicts shows that much of it result from the kind of IR innovation views (tacit knowledge) held by stakeholders. This corroborates insights in the literature that differences in frames, orientations and values are frequently encountered IT innovation problems in universities (Khoo & Hall, 2013; Olsen, *et al.,* 2013). Scholarly works that assessed IT innovation problems from the perspective of frames, orientations and values derived their background arguments from Polanyi's work on tacit knowledge (Polanyi, 1969). The strategic management discipline (Nonaka & Takeuchi, 1995) and, in recent past, the IS field (Kudaravalli, *et al.,* 2017; Kulkarni, Ravindran & Freeze, 2006) have continued to show the importance of tacit knowledge to successful organizing and IS innovation. Blackler (1993), however, argued that there were in existence thoughts that were like what Polanyi termed tacit knowledge before Polanyi's ideas on tacit knowledge were propagated. Good examples are Alfred Schutz's works (Schutz, 1954; 1953; 1951) on the phenomenology of everyday life which informed Berger & Luckmann's (1967) social construction of reality. Alfred Schutz's exposition on experience, practice, action, work and lifeworld represent, to a large extent (Schutz, 1954; Schutz & Luckmann, 1989), what Polanyi and contemporary scholars in the knowledge management field term tacit knowledge (Nonaka & Takeuchi, 1995; Polanyi, 1966). For instance, Schutz & Luckmann (1989) posit that the lifeworld is "*a reality that is mastered by action and the reality which –and on which –our action fails…it holds good that we engage in it by acting and change it by our actions…[it] is the province of reality…which we encounter*

directly… (p.1)." Schutz and Luckmann's thoughts capture the centrality of the arguments presented on the nature of tacit knowledge over the years (e.g. Tsouka, 2005; Lam, 2000; Nonaka, 1994; Argyris & Schon, 1978; Polanyi, 1969).

Irrespective of the differences in views of tacit knowledge, three broad schools of thought promote knowledge management scholarship. The schools tried to provide frameworks for the conceptualization and management of knowledge. The first of the schools is the cognitive approach to knowledge management. This school is championed by scholars who see rational cognitivism and social cognitivism as the bedrock of knowledge management in organizations. At the centre of the assumptions of the rational and social cognitivism schools is the idea that knowledge creation and use have to do with creating representations in the organizational mind. Such representations are expected to appropriately describe realities occurring outside the organizational mind. Argyris & Schon (1978), prominent scholars in the cognitivism school, provided a framework for describing representations and realities by identifying two types of theories that drive organizational actions. The theories are namely, espoused theory and theory-in-use. Bandura (1986), another prominent scholar in the cognitivism school, also used his social learning theory to explicate how people determine their models, that is, those they want to be like. These examples are based on reality and representation matching, e.g. how to match espoused theory (representation) and theory-in-use (reality).

Tacit knowledge management is, consequently, taken to be the ability to create representations that appropriately and adequately describe realities. Argyris and Schon argue that this entails creating policies, routines and work systems that match the ways organizational actors think (theory-in-use). The problem with this approach to tacit knowledge management is the duality, that is, the separation of thought and action (representations and realities). Furthermore, scholars that developed these schools of thought did not specify the genesis and evolution of tacit knowledge. Hence, tacit knowledge management begins in the middle of the park, omitting fundamental aspects that have to do with first-hand experiences (informality and accidentality) in the creation of tacit knowledge. In this study, informality entails experiences gained (i.e. tacit knowledge created) through unstructured and spontaneous acts. Accidentality entails experiences gained (i.e. tacit knowledge created) without prior notice and plan.

The second school in the knowledge management field is the knowledge based theory of the firm which tries to improve on the resource base theory of the firm's factors that determine the performances of firms. Nonaka and Spender are the key actors in this school of thought (Nonaka & Takeuchi, 1995; Nonaka, 1994). Although Nonaka and his colleagues did not focus primarily on tacit knowledge, their propositions presented tacit knowledge as a very important component of knowledge management. For instance, the SECI framework begins with tacit knowledge and ends with tacit knowledge. This is to say that they believed in the existence of two types of knowledge namely, tacit and explicit knowledge (Krogh, *et al.*, 2012; Nonaka & Takeuchi, 1995). Hence, knowledge management involves identifying tacit knowledge, externalizing and socializing it and combining it with explicit knowledge. The high point of the proposition of the knowledge based theory of firm is the combination of tacit knowledge with explicit knowledge to create a superior knowledge that ends up as tacit knowledge. This new tacit knowledge is expected to be internalized after it might have been used for an elongated period of time. The neglect of how tacit knowledge is formed despite discussing how it can be externalized and socialized is a fundamental gap in the theory. As in the cognitive school, informality and accidentality are omitted from knowledge management. The school is also criticized for separating thought and action, and arguing that knowledge is not a product of human action (Lyttinen & Newman, 2008; Patriotta, 2003).

The difference between Nonaka and his colleagues' position on knowledge management and the tacit knowledge management framework proposed in this study is that the proposition put forward in this study is focused entirely on the management of tacit knowledge. The study did not look at the dynamics involved in the combination of tacit knowledge with explicit knowledge even though it recognizes that tacit knowledge can be created from and combined with explicit knowledge. The framework developed in this study focuses on the creation of tacit knowledge through informal, accidental and formal means, as well as its implementation and evolution over time. The framework identifies the possibility for organizations to engage in planned actions such as meetings, trainings, information sharing activities, etc. in order to create and manage tacit knowledge. It also identifies the frequency of opportunities to informally and

accidentally create tacit knowledge. Consequently, the tacit knowledge management framework propounded in this study focuses on how tacit knowledge is created and how it transforms from the stage where it cannot be articulated through the stage where it can be articulated, to the stage where it is collective held and taken-for-granted.

This proposition is close to those championed in the techno-science school of thought that comprises the situated approach, social construction of knowledge and sociology of knowledge. It is, however, different because it focuses directly on tacit knowledge management which the techno-science school sees as a part of the larger picture. Of the three broad sub-schools in the techno-science school of thought, the situated approach primarily deals with tacit knowledge management in organizations although it mixes this up with the creation of explicit (documented practices) knowledge (Lave, 1988). The social constructionism which branches off into two independent schools, namely, social construction of technology and social shaping of technology, deal with how technology is invented and used in the larger societal contexts (Howcroft, *et al.*, 2004; Edge, 1988; Armacost, 1985). The sociology of knowledge evolves from a scholarly tradition that is interested in exploring knowledge creation, use and management as a scientific enterprise (McCarthy, 2005; Merton, 1972). The turning point in these schools is that they believe that knowledge creation cannot be separated from human actions (Mulkay, 2014; Barnett, 1999). For instance, the situated approach advocates that knowledge is created from experiences derived in action (Marin, Cordier & Hameed, 2016).

This is slightly different from the theory of social shaping of knowledge whose arguments were triggered by the nature of technology and the need to provide appropriate template for technology invention and innovation. Both the social construction of technology and social shaping of technology argue that technology is not determinate but socially constructed (Pinch & Bijker, 1984; 1987), the implication being that actions taken towards the invention and use of technology are carefully determined and implemented based on human sentiments. Tacit knowledge, as proposed by these schools, represents the stakeholders' thoughts about technology invention and use. Tacit knowledge management provides the grounds for making policies and regulating practices guiding technology invention, innovation and use (Howcroft, *et al.*, 2004; Edge,

1995). Ideas propagated by these schools have influenced IS studies that tried to explicate the factors that determine IS innovation and use (Bailey & Ngwenyama, 2016; Orlikowski & Scott, 2015; Shen, Lyytinen & Yoo, 2015). There is a strong claim that these schools believe in the union between thought and action; they also identify informality and accidentality in knowledge management. The limitation inherent in the propositions put forward by the schools about knowledge management is that the creation of tacit knowledge and its evolution to the level of being taken-for-granted is not explained. The techno-science school has also been criticized for its inability to develop a particular framework, comparable to the one developed by the knowledge base theory of the firm, for managing knowledge (Patriotta, 2003).

Despite rich insights on the knowledge management in extant literature, there are fundamental limitations in the way tacit knowledge management has been projected over the years (e.g. Rosario, *et al.*, 2015; Shamsie & Mannor, 2013; Lam, 2000; Nonaka & Takeuchi, 1995). The limitations concern the inadequacy of existing explanations on the processes through which tacit knowledge is created and evolves from a point where it could not be articulated, through to when it could be articulated, becomes collectively held and is taken-for-granted at group level. This is to say that there is no adequate explanation of how discrete (low-order and high-order) tacit knowledge is created and how it transforms to shared (collective and common-sense) tacit knowledge. This notwithstanding, the three broad knowledge management schools of thought and the sub-disciplines under them helped to develop two epistemological traditions: the epistemology of possession and epistemology of practice (Orlikowski, 2010; Lyytinen & Newman, 2008; Cook & Brown, 1999). The two epistemologies support the assumption that tacit knowledge can be held by an individual or collectively by a team, group and/or organization. They also claim that tacit knowledge can be acquired through (re)search or by doing everyday life activities (Krogh, *et al.*, 2012; Lyttinen & Newman, 2008; Patriotta, 2003; Bourdieu, 1977).

The epistemologies provided the background assumptions that informed the conceptualization of tacit knowledge in this study and, consequently, the basis for the proposed tacit knowledge management framework. They provided the basis for asking the following question: is tacit knowledge a possession or practice? In the case

universities, for instance, most academics did not consider IR innovation as viable scholarly knowledge management platform. They see IR innovation based on individually developed assumptions that have not been adequately reflected upon in the contexts of the case universities. This is so because most members of the case universities created the low-order tacit knowledge they held through accidental access to information and experiences. There was no planned information sharing and experiences of IR innovation which could trigger joint reflections and actions in the case universities. This observation in the case universities provides evidence for the view that tacit knowledge creation and transformation are derived from practices and indicates that understanding knowledge creation as a practice requires deep reflection. Although the perception of knowledge as practice motivated Nonaka & Takeuchi (1995) to recommend the socialization of tacit knowledge within organizations, they did not engage in adequate reflection to further make the argument for the reality surrounding knowledge as practice. By identifying the importance of externalization and socialization of knowledge management, Nonaka and Takeuchi indirectly affirm that the appropriate way to create and manage knowledge is through collective practice. This study presents a framework that shows that practices such as planned and unplanned access to information and experiences, interactions and dialogues are key to tacit knowledge management. Planned practices are those practices that are deliberately mounted and geared toward a defined goal, i.e., IR innovation tacit knowledge management. This study shows that such practices, when consistently performed, are likely to trigger new behaviour toward tacit knowledge management.

Over the years, some IS scholars have viewed knowledge management from the perspective of knowledge as practice. These scholars put forward strong arguments for the potential of the knowledge as practice epistemology to support the generation of knowledge for IS innovation (van der Hoorn & Whitty, 2015; Scott & Sewchurran, 2008; Introna & Whittaker, 2003; Mingers, 2001). Consequently, IS studies that examine how IS innovation practices are hampered by conflicting views identify how this results in conflicting practices (Marabelli & Galliers, 2017; Orenga-Rogla & Chalmeta, 2017; Bailey & Ngwenyama, 2013). Although these studies did not directly suggest so, ineffective tacit knowledge management promotes conflicts during the design and

innovation of IS (Kudaravalli, *et al.*, 2017; Scott & Sewchurran, 2008). The implication is that any tacit knowledge management framework that is to be considered appropriate must give credence to practices. It must give credence to the fact that knowledge is created through human actions and that human actions are embedded in practices.

5.3 Organizational Contexts of Study Three

Study observations showed that most research subjects in the case universities had low-order IR innovation tacit knowledge, i.e., their IR innovation tacit knowledge could not be articulated. Some research subjects, however, had high-order IR innovation tacit knowledge which enabled them to articulate their knowledge eventhough their ideas about IR innovation were still largely idiosyncratic. Low-order and high-order IR innovation tacit knowledge are the main kinds of tacit knowledge that existed in the case universities. Consequently, it was very difficult for the case universities to successfully reach their IR innovation goals. In University I, for instance, the goal was for the library to promote IR innovation awareness and acceptance among all stakeholders within the university library and throughout the university. The university library confronted the challenge of intimating all stakeholders and gaining their cooperation during IR innovation. In University II, the goal was to raise the understanding of the purpose of IR innovation among key stakeholders and to gain their support. In University III, the goal was to get the participation of every stakeholder in the university in the deposition of resources into IR and in using it to promote the university's visibility. Study observations, however, show that the goals were not reached because the case universities could not implement effective tacit knowledge management framework. This would have allowed the university to identify and understand how IR innovation tacit knowledge is created and how it can be transformed to become collectively held and taken-for-granted.

5.4 Research Method

5.4.1 Research Philosophy

This study is driven by the interpretivism philosophy. In other words, it assumes that there is no reality other than that which is socially constructed (Ngwenyama, 2014; Burrell and Morgan, 1979). The phenomena identified in this study are assumed to be

socially constructed, man-made and temporal (Saunders, *et al.*, 2009; Cavana, Delahaye and Sekaran, 2001; Weick, 1983). So, institutional logics, external pressures, organizational memory and paradox barrier factors are assumed to be socially constructed and temporal (Checkland & Holwell, 1998; Deetz, 1996; Walsham, 1995). The study conceptualizes its subjects as those that create and give meanings and interpretations to the barriers of IR innovation identified in this study.

Given that study one revealed 'unusual' IR innovation barrier factors as a result of the adoption of the inductive research approach, the approach was also used in study two. I chose to adopt inductive research approach because I believe that there are still more clandestine IR innovation barrier factors that were not detected in study one. Study two further validates notions in the extant literature on the power of inductive research approach to facilitate the development of novel theories (Gioia, Corley & Hamilton, 2013; Collins and Hussey, 2003). Consequently, inductive research approach enabled me to identify additional IR innovation barrier factors: external pressure from individual and organizations, conflicting institutional logics, organizational memory and paradox barrier factors. This enabled me to come up with further novel explanations of IR innovation barrier factors.

5.4.2 Specific Ethical Consideration

There were not cases of specific ethical issues raised by any research subject during Study 2.

5.4.3 Research Process

Step 1: I decided on the research question that will inform study three in order to fully attend to the challenges of tacit knowledge which were revealed in studies one and two. Study three was driven by the following research question: *How should the tacit knowledge of relevant stakeholders be managed to positively impact IR innovation in Nigerian universities?*

Step 2: I decided on the sample to evaluate in study three and the sampling technique that I will adopt to select them. I decided that, as in studies one and two, all categories of staff in the case universities, that is, academics, library, administrative staff and IT staff were going to be included in the study sample. I also decided to use snowball sampling technique to enable me to select, among available research samples, those that are most

relevant to the study. Consequently, the interviews conducted in this study were emergent. In other words, each subject was chosen based on the information given by other subjects about his/her relevance to the study. During each interview, I carefully listened for information that may serve to point to the next subject that may be included in the study.

Step 3: I carried out thirty-four (34) interviews with thirty-four research subjects that were selected based on snowball sampling technique. The interviews were unstructured and, hence, were emergent discussions between the research subjects and I on issues related to the research question. Questions asked were also determined by previous interview sessions. Interview sessions also served to clarify and confirm issues presented by other research subjects. Interview was recorded electronically and in field notes.

Step 4: I conducted data analysis of interviews using ATLAS ti software. I also double checked with research subjects to seek their final opinion on issues that appeared unclear and controversial.

Step 5: I did a write up of study three and concluded that the IR innovation barrier factors elicited in studies one, two and three are enough to drive study four which is devoted to carrying out action.

5.4.4 Interviews

I adopted in-depth interview to collect qualitative data which allowed me to engage with research subjects and tease out fundamental issues about the research question. Given that in-depth interview is concened with intensive research of small samples, I chose a small enough to satisfy the requirements of this research method (Boyce and Neale, 2006). I complemented the in-depth interviews with unstructured interview to further facilitate the collection of novel information. The unstructured interviews were spontaneous and emerging, as such, issues discussed with research subjects evolved naturally. The interview sessions lasted between forty-five and sixty minutes.

Table 3.4.1: Categories and Number of Interviews

Categories	Participants	No. of Interviews
Academic Administrators	Deans Heads of Department	6 5
Staff	Academics	10
	Non- Academic Administrators	3
	Librarians	10
Total Number of Interviews		34

5.4.5 Participant Observation

Participant observation occurs when researchers immerse themselves in the everyday life experiences of research subjects. It is believed that cultural and social issues are best studied and understood this way. Participatory observation can be done openly or in a covert situation. According to Spradley (2016), participatory observation has to do with participating in local activities, that is, real life activities of those under study, asking questions, watching events as they unfold, taking field notes, tracking out genealogy, and interviewing informants. Becker & Geer (1957) argued that participatory observation gives room for the collection of the most complete form of data for sociological studies. Participatory observation enabled me to participate in everyday life experiences of research subjects in the three case universities. During this study, I spent a total of four months concurrently in the case universities for me to enable to observe, carry out in-depth research interviews, watch events, attend university lectures, visit key informants and take field notes.

5.4.6 Data Analysis Process

In this study, the type of tacit knowledge held by research subjects was determined through an assessment of the extent of alignment of their concepts of IR and IR innovation with those in the extant literature. Accuracy of concepts was determined by research subjects' ability to clearly describe IR and its innovation in a manner that is aligned with the literature. This entails the extent to which their expressions contain generally acceptable claims (derived from the literature). Themes in interview scripts that indicated the research subjects' concepts about IR and IR innovation were identified. The extent to which research subjects' concepts of IR and IR innovation aligned with concepts derived from literature was used to determine if they had low-order, high-order,

collective or common-sense IR innovation tacit knowledge.

5.5 Empirical Findings

5.5.0 Introduction

Tacit knowledge is dominant among the factors that determine individuals' views and dispositions towards social phenomena, including IS innovation. This study shows that the case universities views and dispositions towards IR innovation are determined by two types of tacit knowledge, namely, discrete (low-order and high-order tacit knowledge) and shared (collective and common-sense tacit knowledge). Study observations show that an individuals' diverse tacit knowledge determine how he/she views new phenomena and realities. For instance, research subjects have diverse tacit knowledge about scientific knowledge publishing before prior to their introduction to IR innovation. This tacit knowledge has been internalized and taken-for-granted over time and, consequently, influences their view of IR innovation.

5.5.1 Low-Order Tacit Knowledge

The first kind of tacit knowledge identified in the research contexts is what I have termed *low-order IR innovation tacit knowledge*, one of two types of discrete tacit knowledge identified in this study. It is created based on privileged information and experiences which are mainly derived through informal and accidental sources. Privileged information (and experiences) are products of impulsive information sharing (and real-life experiences). The reason why low-order IR innovation tacit knowledge cannot be articulated is because they are unstructured and idiosyncratic and are not given serious considerations. Dean of Sciences in University I, for instance, could not explain what IR innovation stands for when asked about her views on the subject. She responded with a question, "*Is it the keeping of local resources in the library so people can have access to them easily*?" She may have mentioned the library because I was introduced to her by the head librarian. There is also the possibility that she got the idea because, at the start of my discussions with her, I indicated that IR is one of the plans the library has in the offing. During the course of my discussions with her, I learned that she heard about IR through 'privileged information.' She derived her views of IR accidentally when she was filling out a form provided by a funding agency. She, however, did not improve on her understanding of IR innovation because she did not get the funding and did not have

an opportunity to think or talk about IR further. Since the experience with the funding agency, she did not have another experience that could have encouraged her to learn about IR.

Similar to this is the case of an academic staff in the Faculty of Law in University I who also had low-order IR innovation tacit knowledge and, as a result, related IR to 'Africana.' Africana are special collections of Nigerian libraries that are made up of publications about Africa and publications authored by Africans. She recollects: "*I have heard about it [IR] but I can't give you a working definition. It is all about special collection of a university.*" She learned about Africana in the university library where a section was dedicated to it. This observation represents a case where an individual creates low-order tacit knowledge based on privileged information gained through unplanned real-life experience. The two scenarios mentioned above are similar to those in University II given that most academics, IT staff, librarians, and administrative staff in the university use privileged information to conceptualize 'institutional repository.' For instance, an administrative staff reveals that "*The term is self-explanatory. It has to do with repositing (sic) an institution's materials (sic).*"

Majority of the research subjects in University III also have low-order IR innovation tacit knowledge. One of the academic staff in the university argues that "*For me institutional repository is for distributing information in the library. The Dean of Academic Planning talks about it once in a while.*" The Dean of Academic Planning's mention of IR once in a while indicates that it is privileged information obtained informally. The academic staff did not hear about IR innovation under other circumstances until the interview session I had with him. Consequently, he had not previously reflected on IR innovation. Also, low-order tacit knowledge was more profound among administrative staff. For instance, the Faculty Officer of the Faculty of Sciences opines, "*I don't think that I know much about institutional repository. All I know is that things like that have to do with making information available for research. I can remember that the Dean mentioned it in a meeting with lecturers long ago.*" This represents a scenario in which privileged information is obtained in formal settings. The scenario in University III is synonymous with those in University I and University II given that most of them learned about IR innovation through privileged information. The

described scenarios in the case universities show that privileged information and experiences are fundamental to the creation of IR innovation tacit knowledge. Privileged information and experiences involve interactions, discussions and activities that were not primarily geared toward providing information about IR innovation. Hence, low-order tacit knowledge is different from other types of tacit knowledge because it could not be articulated.

5.5.2 High-Order Tacit Knowledge

Higher-order IR innovation tacit knowledge involves the ability of research subjects to talk about IR, that is, articulate their views about IR innovation. High-order IR innovation tacit knowledge results from mental reflections about the basic information individuals have about IR innovation. The mental reflections that promote the creation of high-order IR innovation tacit knowledge are prompted by planned information sharing on IR innovation. The information sharing is referred to as planned because they are deliberately and repeatedly carried out to improve stakeholders' views of IR innovation through mental reflection. In the case universitites, few research subjects exhibited high-order IR innovation tacit knowledge owing to repeated access to information about IR innovation. This information enabled them to engage in mental reflection which, in turn, enabled them to articulate what they know about IR innovation. This scenario is different from earlier scenarios where research subjects used the two words in the term 'institutional repository' and their interpretation of what I was doing in their universities to assume the meaning of IR innovation.

Despite the creation of high-order IR innovation tacit knowledge as a result of access to information and mental reflections, research subjects' views of IR innovation are still largely idiosyncratic. This is because the planned information sharing and planned experiences are targeted at individuals and not at groups. Repeated informal and accidental access to information about IR innovation also led to the creation of high-order IR innovation tacit knowledge affirming that the main requirement for the creation of high-order tacit knowledge is repeated access to information. A few librarians, academics and IT staff in the case universities exhibited high-order IR innovation tacit knowledge as a result of repeated experiences and information. Their understanding, however, was limited to personal perspectives as they resulted from individual level of

reflections. In University I for instance, of the nine librarians, three had high-order IR innovation tacit knowledge. As a result, the wider needs and questions that may affect other stakeholders during IR innovation were not considered. The three librarians include the head librarian, the librarian put in charge of IR innovation in the university and a librarian whose husband runs a consultancy firm that propagates IR innovation in Nigeria. The head librarian developed high-order tacit knowledge during his participation in a fellowship program in the UK. His experiences are informal and accidental because the fellowship was not designed for education on IR innovation. He articulates his IR innovation views thus: "*Institutional repository is partly a response to some of the problems that libraries started to face as a result of the increase in the cost of academic journals."* Because his views stem from idiosyncratic high-order IR innovation tacit knowledge, he claims that IR innovation is necessitated because of "*…the problems that libraries started to face...*" He did not appreciate the role that other stakeholders such as academics, IT staff and administrators could play in IR innovation.

The librarian whose husband is engaged in IR innovation consultancy in Nigerian universities articulates her understanding of IR in a similar manner. She developed her perception of IR innovation based on her discussions with her husband. Repeated information sharing with her husband, gave her the opportunity to engage in the mental reflections that prompted the creation of high-order IR innovation tacit knowledge. Given this, she argues that IR is: "*…like a database for some documents like manuscripts, old documents and sometimes theses and dissertations.*" Her definition captures basic IR resources, namely, pre-prints and post-prints, the access to which IR was primarily invented to provide. It, however, limits IR innovation to library information service offering. This scenario also presents an example in which high-order tacit knowledge is created through privileged information and experiences. This is because it is not expected that IR innovation would be discussed at home.

The librarian in charge of IR innovation also articulated IR innovation in a similar manner. He opined that IR innovation, "*…as it is globally known, it is the intellectual property of every university that is managed by librarians.*" He assumes that his views are global views as a result of the experiences he gained as a postgraduate student in the school library. His readings about IR innovation as a postgraduate student led him to

perceive his definition as 'the global view.' This scenario also presents an example of how IR innovation high-order tacit knowledge is derived informally and accidentally. This is because, during his studies, IR was mentioned in passing and was not a major theme taught in the curriculum. Rather, on a few occations, issues regarding IR innovation were mentioned as examples in class. Disappointingly, despite the fact that the views expressed by the three librarians were similar; they all saw IR innovation differently due to the differences in the sources of the privileged information and experiences through which they gained their understanding about IR. This confirms why high-order tacit knowledge may remain idiosyncratic and may lead to conflicts of interest in organizations.

A good example of the conflict of interest can be deduced from the librarian in charge of IR innovation when he was asked to comment on the reasons why IR innovation stalled in University I. He claimed, "*I know what to do to promote institutional repository here. I am just being patient so that the university librarian [head librarian] will not think that I am subverting his authority.*" The head librarian and the librarian in charge of IR innovation have difficulties in understanding one another because their IR innovation tacit knowledge is at high-order tacit knowledge level and not at collective tacit knowledge level. What they want to achieve with IR innovation is still idiosyncratic in nature. This conflict persists because they did not create the opportunity for planned interactions and dialogues on IR innovation that is necessary for the creation of collective tacit knowledge. Planned interactions and dialogues provide the opportunity for collective reflections and negotiation of IR innovation views held by stakeholders, for existing IR innovation views to transform from idiosyncratic views to collective views.

In University III, key players namely, registrar, vice-chancellor, ICT head and a couple of academics had high-order IR innovation tacit knowledge. They were privileged to have repeated access to information and experiences on IR innovation in the universities where they formerly worked. The intention to implement IR was driven by the vice-chancellor, registrar and head of ICT unit who, during planned interactions and dialogues, reached an agreement that IR could help to increase the university's visibility and prestige. This scenario is a good example of how to create collective tacit knowledge

and how collective tacit knowledge can aid IR innovation. However, it is not ideal as it only involves three officers of the university. Collective tacit knowledge can only be created among those 'invited to the table' for interactions and dialogues. The more people involved in interactions and dialogues the more collective tacit knowledge becomes. On the other hand, limiting the number of those involved in interactions and dialogues during IR innovation results in a divide among different stakeholders. In University III, the administration of IR suffered because of dissension between the ICT unit and the university library. One of the librarians involved in the conflict argued: "*We can't work with them on something that is totally our business.*" Given the tension among IT personnel and librarians, the head of ICT unit complained, "*I don't know why they [librarians] don't want to take over the IR, we have trained everybody, may be they need re-training.*"

5.5.3 Collective Tacit Knowledge

While privileged information and experiences result into the creation of low-order IR innovation tacit knowledge, mental reflections that result from repeated access to information and experiences of IR innovation lead to the creation of high-order IR innovation tacit knowledge. As high-order tacit knowledge can be articulated by an individual, it can be transformed to collective IR innovation tacit knowledge through planned interactions and dialogues at group level. A university-wide collective IR innovation tacit knowledge is likely to be created when a university encourages IR innovation stakeholders to engage in planned interactions and dialogues. Planned interactions and dialogues enable them to discuss conflicts and dissensions and to collectively negotiate IR innovation views and assumptions. All the actions required for creating low-order IR innovation tacit knowledge (privileged information and experiences) and high-order IR innovation tacit knowledge (repeated access to information and experiences) must be taken one after the other and combined with planned interactions and dialogues for collective IR innovation tacit knowledge to be created.

The three case universities could not develop collective IR innovation tacit knowledge because they could not implement these actions. In University I, the head librarian notes that if he needs to get in touch with academics, he will meet "*...the vice-*

chancellor who will direct the deans…" to talk to academics. He has no plans in place to promote information sharing and real-time experience of IR innovation which could promote mental reflection among stakeholders. If he had better facilitated information sharing, real-time experiences and planned interactions and dialogues with regards to IR innovation, the university's community would have been able to collectively negotiate their views about IR innovation. Although University II did not have formal plans to start IR innovation, the university's inability to create collective IR innovation tacit knowledge is an additional impediment. A librarian reveals: "*we cannot go out there and talk about institutional repository because most of us in the library don't know much about it.*" The Dean of Academic Planning argues that "*based on what you have said, institutional repository will help us to achieve some of our missions. The problem is how to carry everybody along.*"

The creation of collective tacit knowledge remained elusive to the case universities because it is necessary to create high-order IR innovation tacit knowledge before there can be collective IR innovation tacit knowledge. Hence, the extent of success recorded in the universities is limited. Academics, librarians and IT staff had different views of IR innovation. Librarians saw it as a library and information service that should be handled by the library. ICT staff saw it as a university wide information delivery service that could be used to reach wider goals like promoting the university's image globally through webometric ranking and, therefore, within their purview. Academics saw it as a technology that is capable of promoting the dissemination of their research work, and as a result should be innovated to allow remote deposition from their offices. An academic argues that "*they should make us submit papers from our offices instead of insisting that we should take it to somebody in the ICT unit to submit on our behalf.*" The ICT director argues that "*we need to guide the university from the embarrassment of plagiarism and copyright that may result if people are allowed to deposit their works directly.*" These are some of the many conflicting areas of IR innovation experienced in the case universities. These dissensions persisted because the universities did not promote the interactions and dialogues that would have enabled these key stakeholders to negotiate and arrive at collective IR innovation tacit knowledge.

5.5.4 Common-Sense

The fourth type of IR innovation tacit knowledge which is likely to be created as a result of effective management of stakeholders' tacit knowledge is IR innovation common-sense. Observations show that the creation of common-sense requires planned and sustained real-time enactment of IR innovation. This is likely to lead to the development of collectively negotiated taken-for-granted interpretations of IR innovation realities over time. Observation further show that it was not possible for University I and University II to create IR innovation common-sense as it requires an on-going IR innovation project which would provide the platform for real-time enactment of IR innovation over a long period of time. It is the collectively planned and sustained real-time enactment that provides opportunity for collectively negotiated meanings ascribed to IR innovation realities. Surprisingly, University III has a functional IR but was unable to create IR innovation common-sense. This shows that having a functional IR does not mean that the university in question was able to create IR innovation common-sense. The non-existence of IR innovation common-sense threatened the sustainability of IR innovation in University III. It affected the extent to which it was accepted and the number of resources that were deposited in it at the time of this study. The implication of this on IR innovation tacit knowledge management is enormous. First, it shows that for IR innovation ideas to reach the level of shared tacit knowledge, activities related to it must be promoted extensively throughout the university. This would encourage community members to be engaged in planned interactions and dialogues on IR innovation. Second, all stakeholders must collectively experience and participate in on-going IR innovation in real-time. Collective experience and participation will enable them to negotiate meanings and interpretations of issues connected to IR innovation.

Findings in the study raises the suspicion that most universities in developing countries whose IR are listed on global IR lists are likely not to have IR innovation common-sense. The implication of this is that IR has not yet been embedded in the routines of these universities. Example can be drawn from the experience of an academic staff in University III who complained: "*I don't know about IR in this university. Nobody talks about it…I have heard about it in workshops and hope we can develop one.*" An administrative staff argued: "*it is all about academics, admin staff has nothing to do with*

institutional repository…yes my dissertation can be deposited in it but I still feel it's for academics…we are never involved in it." A librarian also argued that "*here in this university, institutional repository is meant for ICT…let them run it and also sell the ideas to the whole university…the library is not encouraged to participate.*" These three examples show dissensions among stakeholders indicating that IR innovation shared tacit knowledge was not created in University III although it has a functional IR. In conclusion, this study reveals that low-order IR innovation tacit knowledge is required for stakeholders to gain IR awareness, that is, to learn about it. High-order IR innovation tacit knowledge enables stakeholders to articulate and discuss about IR innovation. Collective IR innovation tacit knowledge allows for stakeholders to be able to collectively innovate IR, while common-sense IR innovation tacit knowledge promotes the sustainability of IR innovation.

5.6 Theoretical Elaboration of the Findings

An important question that urgently needs the attention of stakeholders' in areas of knowledge management and IS is: how is tacit knowledge created? This question has not been adequately answered in available theories of knowledge management. In the social cognitivism approach to knowledge management, for instance, while Bandura shows how people determine who to take as their models, he did not adequately explain how they derive the ideas that inform this decision (Bandura, 2014; 1986). Notions in the cognitivism approach to knowing and organizing therefore seem to suggest that people spontaneously arrive at tacit knowledge. It omitted the social processes of selecting from alternative representations and how the social processes determine the final selection. This is visible in the later studies by Argyris & Schon (1978) and Argyris' (e.g. Argyris, 1995; 1991) that explicate the struggle faced by organizations in their effort to align espoused theory and theory-in-use. There is no adequate explanation about the social processes that lead to the creation of espoused theory and theory-in-use. This study provides explanations for how organizational actors came about the theory-in-use that they applied to enact IR innovation practices. The study identified privileged information and experiences as sources of the tacit knowledge that determined how stakeholders enact IR innovation. Most research subjects informally and accidentally got to know about IR when filling out forms, discussing with colleagues and family members and in

conferences, workshops and fellowship programs that were not primarily meant for IR innovation. This privileged access to information and experiences led to the creation of IR innovation tacit knowledge.

The gap in accounting for how tacit knowledge is created is also visible in the knowledge based theory of the firm where Nonaka and his colleagues argue the importance of tacit knowledge to innovation (Rosario, *et al.*, 2015; Rebeiro, 2013; Krogh, *et al*., 2012). Even within the situated approaches like formative context, community of practice and activity system, the genesis of what becomes formative, practice and activity system was not adequately explicated (Foote & Halawi, 2018; Lanzara, 2016; Wenger, 2011; Ciborra & Lanzara, 1994; Blackler, 1993; 1992). In its endeavour to trace the processes through which knowledge (technology) becomes institutionalized, the techno-science stance also did not properly account for the genesis of tacit knowledge (Orenga-Rogla & Chalmeta, 2017; Robey, *et al.*, 2013; Leonardi, 2012). In actor network theory, the primary focus is to identify all stakeholders and how they come to take issues relating to technology innovation for granted, but not how tacit knowledge is created in the process (Elder-Vass, 2015; Sayes, 2014). This study provides a valid answer to the question: how is tacit knowledge created? It shows how privileged access to information and experience result in the creation of low-order tacit knowledge.

The implication on tacit knowledge management is significant. First, it shows the importance for tacit knowledge managers to understand how stakeholders create tacit knowledge as the sources of tacit knowledge determine its nature. Second, it shows the importance of sharing information about IS and giving stakeholders the opportunity to practically experience IS innovation processes at every stage. It is necessary to provide planned access to information and experiences because inadequate privileged information and experiences may lead to inappropriate and negative perception of IS among stakeholders. Tacit knowledge management, therefore, involves identifying possible sources of privileged information and experiences that may determine the kind of tacit knowledge stakeholders create about the IS in question. By neglecting sources and genesis of tacit knowledge, most IS studies were unable to provide information about how tacit knowledge creation can be managed. As a result, tacit knowledge management was presented as spontaneously emergent. Tacit management is also assumed to be an

endeavour geared towards turning tacit knowledge into explicit knowledge (Hoehle & Venkatesh, 2015; Halloran, 2008; Tanriverdi, 2005). Given the insights in the extant literature and those discovered in the contexts of this study:

> *Proposition I: Effective tacit knowledge management is likely to be achieved if universities in developing countries understand that privileged information and experiences lead to the creation of low-order IR innovation tacit knowledge.*

This study further shows how low-order IR innovation tacit knowledge transforms to high-order IR innovation tacit knowledge as a result of repeated access to information and experiences and mental reflections. Even though research subjects work within the same units and/or universities, their level of access to information and the kinds of experiences they have with regards to IR innovation were different. This affected the extent to which they are able to engage in the mental reflections required to transform low-order IR innovation tacit knowledge to high-order IR innovation tacit knowledge. It also influenced their ability to articulate their understanding of IR innovation. The three elements (access to information, access to experiences and mental reflections) of tacit knowledge management that were identified as crucial in the creation of high-order IR innovation tacit knowledge are all visible in existing theories of knowledge management. For instance, the matching of representations and reality outside the organizational mind requires these three tacit knowledge transformation elements (Argyris, 2017: Bandura, 2014). This is also the same with regards to externalizing, socializing and combining tacit knowledge as propagated in the knowledge based theory of firm (Rosario, *et al.*, 2015; Zheng, *et al.*, 2010). The techno-science approaches to knowledge management also give credence to these three elements (Orenga-Rogla & Chalmeta, 2017; Wenger, 2011; Patriotta, 2003). This is because formative context, community of practice and activity system are formed as a result of access to information and experiences, and mental reflections.

The gap in available theories relates to the comprehensiveness of the explanations provided on how access to information and experiences promote mental reflections that, in turn, enable organizational actors to create high-order tacit knowledge. Earlier studies place emphasis on formal organizational structures and the ability of organizations to use rules and regulations as mechanisms to promote tacit knowledge externalization and

socialization (Shamsie & Mannor, 2013; Krogh, *et al.*, 2012; Nonaka & Toyama, 2005). This technically results in the separation of thoughts and actions, a practice that has been criticized in the extant literature (Orlikowski, 2010; Morgan, 2007; Senge, 2006; Weick, 1983). IS studies that follow this assumption seem to present a 'rule of the thumb' approach to the way tacit knowledge can be manipulated in IS innovation (Kudaravalli, *et al.*, 2017; Halloran, 2008; Iversen, *et al.*, 2004). Authors of these works see the processes of combining tacit knowledge with explicit knowledge as structured, predictable, formal and organized. Most times they present the combination of tacit knowledge with explicit knowledge during IS innovation as events. These perspectives have been critiqued by some IS authors (Avgerou, 2010; Howcroft & Light, 2010; Orlikowski, 2010) who show the implications of the gaps in knowledge management studies (e.g. Krogh, *et al.*, 2012; Zheng, *et al.*, 2010; Nonaka & Takeuchi, 1995) on how IS scholars conceptualize knowledge management as social processes.

In this study, the role of informality and accidentality in the acquisition of the information and experiences that organizational actors use to transform low-order to high-order IR innovation tacit knowledge shows that organizations need to engage in sustained information sharing and experiences if they are to achieve effective tacit knowledge management. The study shows that formal organizational structures can form barriers to continuous information sharing during IR innovation and highlights the importance of a deliberately mounted information sharing program so that effective tacit knowledge management may be achieved during IS innovation (Lee, *et al.*, 2016; Shao, *et al.*, 2016; Liu, *et al.*, 2015). A major problem confronting tacit knowledge, as revealed in the study, is the tendency to categorise privileged group(s) as the core IR innovation stakeholders. This led to dissensions in how IR innovation was conceptualized and conflicts of interest across different professional groups in the case universities. These revelations provide stakeholders with examples of barriers to watch out for when trying to implement tacit knowledge management during IS innovation. It also shows the processes through which each of the problems identified evolve into other problems. This type of explanation on the role of tacit knowledge management in IS innovation and in knowledge management studies has not been provided in the past.

Given experiences gained in the research contexts and insights available in the

extant literature:

> *Proposition II: Effective tacit knowledge management is likely to be achieved if universities in developing countries understand how planned information sharing and experiences, and mental reflections promote the creation high-order tacit knowledge.*

A pressing challenge to tacit knowledge management is the creation of collective tacit knowledge. This challenge is at the centre of the three broad schools of thought that have influenced the implementation of knowledge management over the years. The idea of creating representations and matching them with realities show that collective tacit knowledge creation is at the centre of cognitive knowledge management school. Notions propagated in the school culminate in creating collective understanding of both representations and realities (Barley, Treem & Kuhn, 2018; Foote & Halawi, 2018; Argyris, 2017; 1995; Bandura, 1986). This also appears in the knowledge based theory of the firm where the process by which knowledge can reach a point of being collectively held at group level were explicated (Rosario, *et al.,* 2015; Krogh, *et al.,* 2012; Zheng, *et al.,* 2010). Nonaka and his colleagues' exploration of knowledge management is motivated by the need to communicate organizational issues to stakeholders collectively, that is, to create collective tacit knowledge.

This also spans through the efforts made in the situated approaches to understanding the nature of formative contexts, communities of practice, and activity systems. In fact, formative contexts, communities of practice and activity systems are collective knowledge that have been taken-for-granted (Lanzara, 2016; Patriotta, 2003; Ciborra & Lanzara, 1994). In techno-science, the idea of collective tacit knowledge can also be deduced. Social construction of technology, social shaping of technology and sociology of knowledge all aim to provide answers to questions regarding the process by which technology is socially constructed and shaped, and knowledge becomes collectively accepted within a community of scientists, respectively (Schantz & Seidel, 2011; Howcroft & Light, 2010; Howcroft, *et al.,* 2004; Latour, 1987; Ben-David & Sullivan, 1975). All knowledge management schools and their sub-disciplines study how knowledge can be managed to so that it reaches a point where it is collectively held at group level. Yet, few frameworks (e.g. Wenger, 2011; Nonaka & takeuchi, 1995) exist

for managing tacit knowledge, particularly the creation of collective tacit knowledge, thereby, hampering innovation management in organizations including those involved in IS innovation (Hoehle & Venkatesh, 2015; Tanriverdi, 2005).

This study shows that, while IR innovation is desirable in the case universities, dissensions in the conceptualization of IR innovation was a significant barrier. In developing country contexts, including the case universities, IR innovation is mainly considered to concern university management and ICT unit. Consequently, IR innovation is socially shaped to promote the prestige of universities through webometric ranking rather than to bridge the existing knowledge divide (Asogwa & Ugwuishiwu, 2016; Abrizah, *et al.,* 2010). In most cases, librarians are given secondary consideration, while academics and other stakeholders are seen as users whose views are not required during innovation (Shearer, 2013; Westell, 2006). This scenario highlights the need for the development of collective tacit knowledge. Collective IR innovation tacit knowledge can only be created when all stakeholders are given the opportunity to dialogue and interact on the subject. Findings in this study reveal that such interactions and dialogues must be planned and coordinated towards the creation of IR innovation collective tacit knowledge. Unfortunately, the social construction of technology and situated approach seem to suggest that people within any social context can construct technology without a formal plan (Kudaravalli, *et al.,* 2017; Hoehle & Venkatesh, 2015; Blackler, 1993). Scholars in the discipline did not fully explain how social tensions evolve and hamper the processes of collective construction and shaping of technology. Experiences in this study illucidate the importance of tracing the origins of social tensions and their evolution at different innovation stages. It also shows the importance of providing stakeholders the opportunity to engage in interactions and dialogues with regards to IS innovation to the creation of collective IS innovation tacit knowledge. The ability of organizations to transform high-order tacit knowledge to collective tacit knowledge is determined by their ability to provide such opportunities. Consequent to the insights available in the extant literature and experiences gained in the research contexts:

> *Proposition III: Universities in developing countries are likely to achieve effective IR innovation tacit knowledge management if they implement planned interactions and dialogues to create collective IR innovation tacit knowledge.*

In the knowledge management discipline, insights in the social studies of technology are often used to explain how technology becomes enduring and institutionalized (Patriotta, 2003). In other words, scholars in the field try to trace genealogically the process through which knowledge is created, accepted, enacted, taken-for-granted and discarded **(**Schantz & Seidel, 2011; Latour, 1987 Ben-David & Sullivan, 1975**)**. Other genres of knowledge management, namely, cognitive and knowledge based theory of the firm also promote notions that indicate that knowledge management is expected to promote knowledge to the level where it may be taken-for-granted. For instance, when Nonaka and his colleagues used the term 'internalization', they were promoting a knowledge management system that is capable of helping organizations take their knowledge base for granted. This is very important because knowledge that has been taken-for-granted are acted upon without reflection and have formed the basis for actions (Zhao, 2004; Nanaka & Takeuchi, 1995; Schutz & Luckmann, 1989). The IS discipline has also highlighted the need for IS innovators to develop ways by which IS stakeholders can be stimulated to take IS innovation for granted (Foote, & Halawi, 2018; Lanzara, 2016; Hoehle & Venkatesh, 2015; Howcroft, *et al.*, 2004).

Most of the IS studies that proposed the spurring of innovators to internalize IS innovation processes, however, are based on variance assessment. This is to say that they assessed the relationship between identified independent and dependent variables (e.g. Hoehle & Venkatesh, 2015). As a result, they overlook the processes through which the variables evolve, get accepted and become enduring to the point where they are taken-for-granted. Avgerou (2013) points out several limitations of IS studies that were based on variance assessment. Langley *et al*. (2013) provide insights on how to trace social processes in ways that permit the exposition of their histories, evolutionary periods and how they become taken-for-granted. Bailey & Ngwenyama (2013) offer a good example of how IS scholars can trace social processes in ways that expose their histories, evolutionary periods and how stakeholders come to take IS for-granted. Insights derived through this study present processes and explanations of the challenges that deprive the case universities from creating IR innovation common-sense.

At the centre of these challenges is real-time enactment, that is, real-time

participation in the innovation and use of IR. It was observed that real-time participation (usage and participating in innovation) promote the development of collectively negotiated meaning. Since stakeholders in University III did not use its IR, it was difficult for the university to create IR innovation common-sense. The stakeholders did not have opportunities to collectively negotiate meanings surrounding IR innovation in real-time. The study shows that common-sense can only be created when stakeholders interact, dialogue and engage in real-time enactment of IR innovation at group level. It presents IS materiality in action, something that exists in stakeholders' tacit knowledge and practices. This is different from IS materiality as proposed by Robey, *et al.* (2013), Leonardi (2012) and Jiang, Klein & Shepherd (2001). This study therefore presents the opportunity to ask questions on the extent to which IR innovation common-sense has been developed in universities that have innovated it in developing country contexts. Answers to questions about IS common-sense creation can reveal the extent to which IS innovation involves its stakeholders. Consequent to the insights derived in the extant literature and those gained in the research contexts:

> *Proposition IV: Effective IR innovation tacit knowledge management is likely to be achieved if universities in developing countries engage in sustained real-time enactment and collective negotiations of the meanings attached to IR innovation realities to create IR innovation common-sense.*

The tacit knowledge framework derived from this study is show in the model below.

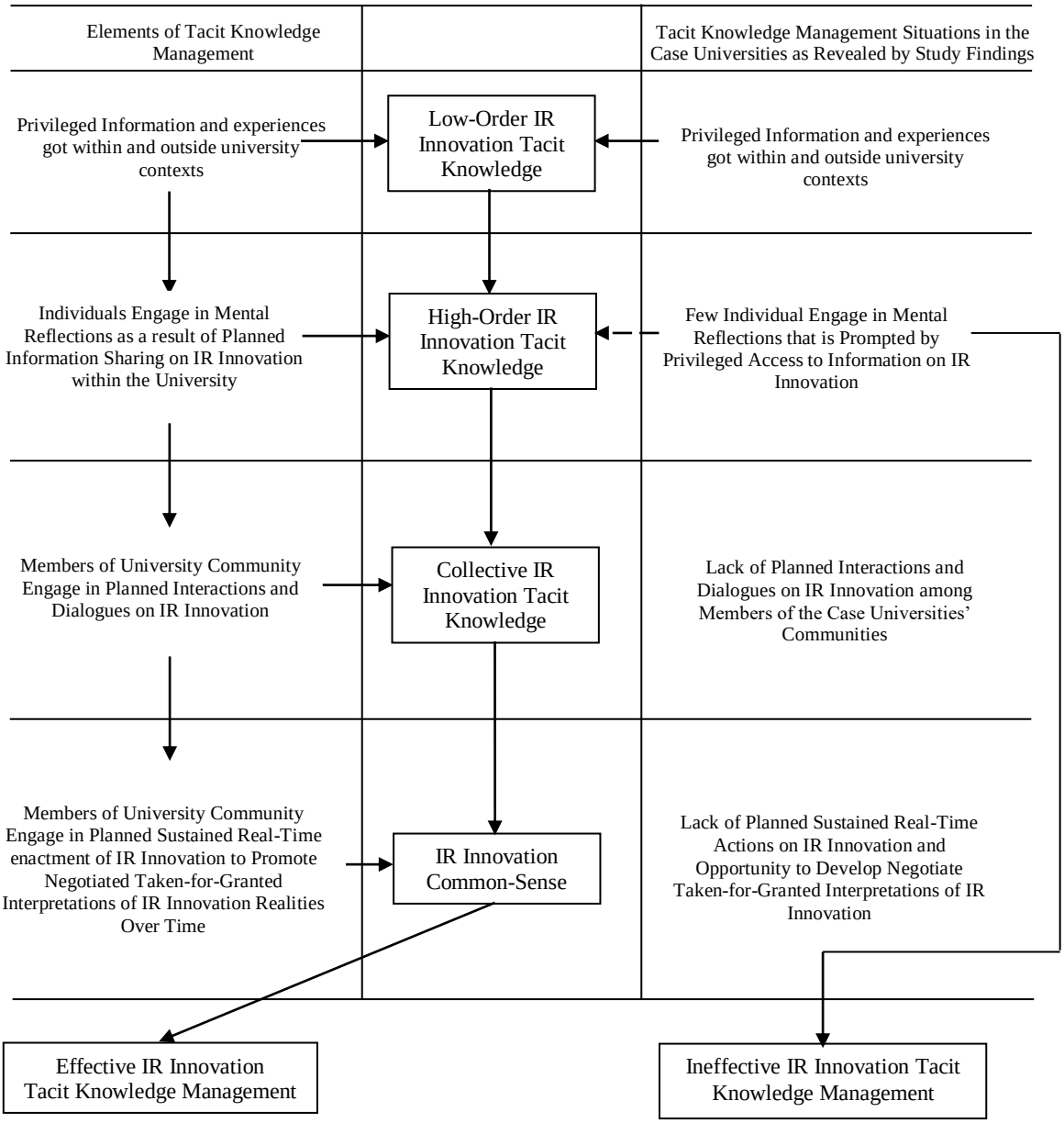


Figure 5.1: Dynamics of IR Innovation Factors at Individual Level

The implication of the research model presented in this study on the theory and practice of knowledge management in IS innovatio is that it identified the sources of tacit knowledge. In other words, the model indicates that tacit knowledge does not spontaneously emerge; rather, it emerges as a result of certain processes. It often emerges on account of privileged access to information and privileged experiences. It is, therefore, important for innovators to inquire and understand how the background information and experiences of IS stakeholders that inform tacit knowledge creation

evolve. Such insight, in turn, helps to identify innovation problems and their potential solutions. The model also provides theoretical and practical insights that show the importance for IS innovators to develop planned information sharing activities and for all stakeholders to be involved in real-time enactment of IS. Information sharing, experiences, interactions, dialogues and real-time enactment of IS enable the creation of IS innovation common-sense by facilitating the development of negotiated interpretations and meanings of IS innovation realities leading to collective internalization. By implication, the model derived from the study provides insights about fundamental questions surrounding how taken-for-granted assumptions about IS are negotiated over time. This in turn provides an actionable tacit knowledge management framework that can be implemented during IS innovation. It shows that IS innovation is not a one-off activity but a cluster of social processes that are socially constructed and shaped over elongated periods of time.

5.8 Conclusion to Study Three

This study provides an answer to the following research question: how should the tacit knowledge of relevant stakeholders be managed to positively impact IR innovation? In doing so, the study shows that IR innovation tacit knowledge management requires the transformation of tacit knowledge from discrete to shared tacit knowledge. It shows that access to a variety of IR innovation views among stakeholders results in the development of low-order IR innovation tacit knowledge. Unplanned access to information and experiences are fundamental sources of low-order tacit knowledge. For low-order tacit knowledge to evolve to high-order IR innovation tacit knowledge, repeated access to information and mental reflections is necessary. The study clarifies that externalization and socialization of tacit knowledge is critical since, most times, low-order tacit knowledge derived from unplanned access to information and experiences do not match with organizational realities due to their idiosyncratic nature. However, mental reflections at the individual level leads to the creation of high-order tacit knowledge which is still idiosyncratic. Consequently, there are two kinds of discrete IR innovation tacit knowledge, namely, low-order and high-order IR innovation tacit knowledge. The study expands the dynamics of tacit knowledge management proposed in the strategic management discipline, that is, socialization and externalization of tacit knowledge. It

describes the genesis of low-order tacit knowledge and its evolution to high-order tacit knowledge, a point at which tacit knowledge can be articulated. In addition, the study shows the connection between discrete and shared tacit knowledge; the externalization and socialization of tacit knowledge result from the creation of collective IR innovation tacit knowledge through planned interactions and dialogues. Finally, it shows that sustained enactment and negotiated interpretation of IR innovation promotes the creation of IR innovation common-sense. The study provides insights about the characteristics of tacit knowledge and how they can be understood and managed to promote IS innovation. This study redefines tacit knowledge management by exposing the process involved in the transformation of tacit knowledge from low-order tacit knowledge through high-order tacit knowledge and collective tacit knowledge to common-sense. The four actionable elements of tacit knowledge transformation were identified and explained which are unplanned access to information and experiences, planned information sharing, interactions and dialogues and sustained real-time participation in IS innovation. The study conceptualizes IS innovation as tacit knowledge management.

Chapter 6: Summary of Contributions of the PhD Research

6.1 Theoretical and Practical Contributions

The three studies reported in this thesis bring together three fundamental contexts that are often evaluated separately when accounting for factors that determine IS innovation. They show that the IR innovation barrier factors the case universities are contending with emanate from global, local and organizational contexts. In the case universities, the three contexts jointly promote IR innovation barrier factors at institutional, organizational and individual levels. In this study, global contexts entail contexts beyond local national boundaries, and that span across different countries across the globe. Local context indicates national contexts, that is, the immediate national socio-physical context where the case universities are located. Local contexts encompass different categories of social actors and organizations within a national boundary. Organizational contexts entail the internal contexts of each of the case universities, which comprise members of each case university's community and organizational structures of the case universities. Organizational contexts also comprise of processes that are peculiar to each case university, particularly as it relates to IR innovation. Insights derived from this study expose the limitations of studies that focused only on institutional contexts. These studies leave out organizational and individual level factors. They also show the limitations of studies that focused either only on organizational level or individual level without considering the combined effects of all three levels. There are, for instance, IS studies that assessed globalization trends that come to bear in IS at the institutional level (Martinson, 2016; Narula, 2014; Galliers & Meadows, 2003). In these studies, the combined effects of global trends, local factors and organizational factors on IS innovation at organizational and individual levels were neglected.

The growing culture among IS scholars to look into how institutional logics influence IS innovation coincides with the tendency to separate assessments done on IS innovation at organizational level from both institutional and individual level (e.g. Andoh-Baido, 2017; Linderoth, 2014). Most of these IS studies, being informed by institutional theory, pay strict attention to organizational contexts and do not consider the role of events that occur in global contexts. Another set of IS studies that have gained ground over the years are those that assess the role of knowledge management in IS

innovation; they, however, do not assess how factors at institutional level and organizational level combine to influence IS innovation at the individual level **(**Foote, & Halawi, 2018; Aurum *et al.*, 2008; Tanriverdi, 2005). If the insights derived in Study 3 about the role of tacit knowledge management are anything to go by, it shows that IS scholars need to pay attention to factors at both institutional and organizational levels that determine knowledge creation practices during IS innovation. Taking together insights gained from all three studies, it is concluded that effective tacit knowledge management is determined by factors inherent at institutional, organizational and individual levels. It follows that views which become embedded through externalization, socialization and sustained real-time enactment are determined by a variety of factors that occur at institutional, organizational and individual levels (Zheng, *et al.*, 2010; Krogh, *et al.*,2012; Nonaka & Takeuchi, 1995).

Factors identified at the institutional level include globalization trends, transformation of universities and conditions of university libraries. Organizational level factors include institutional logics, paradox barrier factors and adherence to traditional management orientations. At the individual level, tacit knowledge management elements are the identified as indicators of effective tacit knowledge management. They include privileged access to information and experiences, mental reflections, planned interactions and dialogues and planned and sustained real-time enactment. The difference in stakeholders' view of IR innovation at the individual level is shown to be determined by factors across institutional, organizational and individual levels. Although IR innovation barrier factors identified in the discipline are those that occur within universities, the impact of tacit knowledge management has not been addressed in the extant literature. In other words, IR scholars remain focused on factors that emanate at organizational level; leaving out factors at the institutional and individual levels. Consequently, scholars and practitioners have been engaged in implementing innovation resolutions without addressing factors that originate at institutional and individual levels.

In the recent past, a few IS studies superficially point to the combined effects of institutional, organizational and individual level factors on IS innovation (Sahay & Mukherjee, 2015; Braa, *et al.*,2007b; Adelakun, 2005; Al-Gahtani, 2003). A study by Linderoth (2014), for instance, assessed the impact of institutional logics promoted by

organizational level factors on IS innovation and showed that the internal operations of organizations making effort to innovate IS may be determined by other organizations which, in turn, influence IS innovation. These studies, however, did not expose how institutional, organizational and individual level factors determine the evolution of institutional logics that influence IS innovation. By identifying globalization trends such as the strong desire for ICT innovation, multiple (and conflicting) sources of IR awareness and adoption of inadequate IR innovation success factors, this study shows that factors at institutional level influence the evolution of institutional logics that determine IS innovation. It turns stakeholders' attention to how IS innovators may derive IS innovation ideas from around the globe as a result of easy access to information and the movement of people across international boundaries. The study confirms those theoretical stances in the globalization discipline area relevant to IS scholarship and practice (e.g. steger, 2009; Giddens, 1991).

Over the years, socio-technical and constructivism approaches to IS have helped IS scholars to come to term with the fact that organizational actors do not always operate in formal organizational structures (Ngwenyama & Nielsen, 2014; Avgerou, 2013; Lyytinen & Newman, 2008; Orlikowski, 2006). Informal social structures are vital sources of IS induced organizational transformations. These IS studies did not, however, provide all the explanations required to understand how informal social structures are supported by a combination of factors at institutional, organizational and individual levels. Most of them concentrate on factors inherent at organizational level leaving out the role of globalization trends such as access to multiple (and conflicting) ideas determine IS innovation in determining how individuals think and act. In Study 1, for instance, access to diverse ideas resulted in uncoordinated grasping for ICT innovation in case universities. The pursuit for ICT innovation was seen to be uncoordinated because the case universities embarked on ICT innovation based on testimonies derived from across the globe and without considering the resources available to them. Uncoordinated pursuit of ICT innovation also resulted in an increase in the cost of running the universities. The study also uncovers relationships between access to diverse ideas, uncoordinated pursuit of ICT innovation, cost of running universities and adoption of new managerialism. All these factors are indicators of institutional level IS factors.

From a wider perspective, the study shows how institutional level factors determined organizational level factors including institutional logics, adherence to traditional orientations of university management and paradox barrier factors. Furthermore, it shows that institutional level factors determine institutional logics which, in turn, influence the social construction of paradox barrier factors.

Overall, the study contributes to the understanding of both IS innovation practitioners and scholars by revealing novel and fundamental information regarding the influence of institutional, organizational and individual level factors on IS innovation. The adherence to traditional management orientations by universities provides example of how organizations struggle to maintain some of their management orientations despite pressures to make changes. Universities across the globe derive their reputation and acceptance from some taken-for-granted practices that are known globally. Both Study 1 and Study 2 expose the forces that influence the institutionalization and deinstitutionalization that take place in universities as well as other organizations beyond what is originally known. The two studies provide insight to IS stakeholders engagement with institutional and organizational levels and how this engagement promotes the retention of organizational practices that determine IS innovation. While Study 2 shows that institutionalization occurs at an organizational level, Study 1 provides information about the role of institutional level factors in promoting the maintenance or rejection of institutionalized practices.

Isomorphism has been identified in the past as one factor that promotes the evolution, retention and/or discarding of institutional logics. Most accounts of isomorphism in the extant literature did not, however, pay enough attention to how it is promoted by occurrences at institutional level (Powell & DiMaggio, 2012; Leiter, 2005). Again, both Studies 1 and 2 show that the combination of the disciplines of globalization and institutional theories has a strong potential to provide new answers to questions IS scholars have attempted to answer on how institutional and organizational factors impact IS innovation. A good example can be drawn from expositions on paradox factors in Study 2. While the revelations about paradox barrier factors indicate that they are socially constructed as per the social constructionism discipline (Avgerou, 2013; Orlikowski, 2010; Mumford, 2006; Howcroft, *et al.,* 2004), institutional level factors

determine how they were socially constructed (Steger, 2009; Fiss & Hirsch, 2005; Giddens, 1991; Held, *et al.*, 1999). This explicates how globalization trends determine what goes on in local organizations. It exposes that a given IS may be socially constructed in different ways in different contexts as a result of the variations in information that stakeholders have about IS. This extends insights in studies such as the one done by Sahay & Mukherjee (2015) by turning stakeholders' attention to the fact that organizational level factors are determined by institutional level factors. Factors at institutional and organizational level together determine IS innovation. This new theoretical and practical exposition expands the list of factors that IS innovators look out for when deciding on the nature and effects of IS innovation barrier factors.

In Study 3 where individual level factors were the primary focus, the individuals' view of IR innovation was identified as being a primary determinant of IS innovation. Most IS studies that assess individual level factors in IS innovation focus on finding out the role of organizational and social structures. A large number of studies addressed the impact of informal social structures on IS innovation (Liu, *et al.*, 2015; Ngwenyama & Nielsen, 2014). IS studies that are informed by knowledge management themes provide insights on how informal social structures impact knowledge management during IS innovation. These studies were informed by theoretical change that promote the reconceptualization of IS as socially constructed and IS stakeholders as rational social actors (Mumford, 2006; Lamb & Kling, 2003; Orlikowski & Broudi, 1991; Weick, 1983). Without paying attention to informal social structures, these studies address knowledge management from the perspective of tacit knowledge management by investigating how stakeholders come about their views of IS innovation. They also address how IS innovators may ensure that stakeholders' views are effectively managed so that they are uniform and enduring.

The driving force behind Study 3 is the belief that stakeholders innovate IS according to how they view it. This notion was promoted by assumptions about the factors that influence the socially construction of IR innovation. Given that views are tacit knowledge, Study 3 presents tacit knowledge management framework that outlines steps that can be taken to understand how IS innovation tacit knowledge management can be implemented to ensure that IS tacit knowledge is collectively held by stakeholders.

Knowledge management was originally based on creating, sharing and using valid knowledge at organizational level. Validity of knowledge is determined by its acceptance (either democratically through negotiation or by force) by social actors (Bailey & Ngwenyama, 2016; Rosario, *et al.,* 2015; Krogh *et al.,* 2012; Zheng, *et al.*, 2010). The IS tacit knowledge management proposed in Study 3 involves identifying sources of tacit knowledge, factors that determine its effective transformation and how it can be collectively held at a group level. In other words, study 3 does an individual level assessment of factors that impact IS innovation. Its findings show that the views of individuals are critical to successful IS innovation because organizational actors could act collectively or idiosyncratically depending on those views. Studies 1 and 2, however, shows that individual level factors like IS innovation views are derived from institutional and organizational levels. They show that the sources of tacit knowledge are inherent at the institutional and organizational levels. This revelation answers the following question which has not been sufficiently addressed in the past: how did stakeholders develop the views (tacit knowledge) they hold about IS?

The combination of insights in the disciplines of globalization, institutional theory and knowledge management exposes probable sources of tacit knowledge. It exposes the role of informality and accidentality in tacit knowledge management. This is because, for organizational actors, contexts outside organizational contexts are highly likely to be informal. The theory and practice of tacit knowledge management derived in this study highlight the importance of institutional, organizational and individual level factors. This is a significane theoretical and practical contribution given that tacit knowledge management involves the creation and transformation of tacit knowledge from discrete to shared (Rosario, *et al.,* 2015, Zheng, *et al.,*2010; Lam, 2000; Nonaka, 1994), where discrete tacit knowledge is at the individual level and shared tacit knowledge is at the organizational level. The sources of tacit knowledge are also inherent at the institutional level. The contribution expands the knowledge management frameworks proposed across the three broad knowledge management schools over the years (Patriotta, 2003; Argyris, 1995; Ciborra & Lanzara, 1994; Blackler, 1993; Bandura, 1986). To make the tacit knowledge management framework proposed in this study actionable, four elements were proposed, namely, privileged information and experiences, mental reflection,

planned interactions and dialogues and planned real-time enactment. These four elements are embedded in the institutional, organizational and individual levels of IS innovation. The combination of the three studies provides unique theoretical and practical stances that are beneficial to IS researchers and practitioners who understand and implement these tacit knowledge management elements. It also shows that factors at all three levels, institutional, organizational and individual levels, are fundamental to IS innovation. Like other studies done in the past, the three studies are not exhaustive. Theoretical and practical insights derived through them, however, have the potential to spur new studies that will address more factors inherent in the institutional, organizational and individual levels that affect IS innovation. The model shown below presents the outcome of the series of studies reported in this thesis in a diagrammatic form.

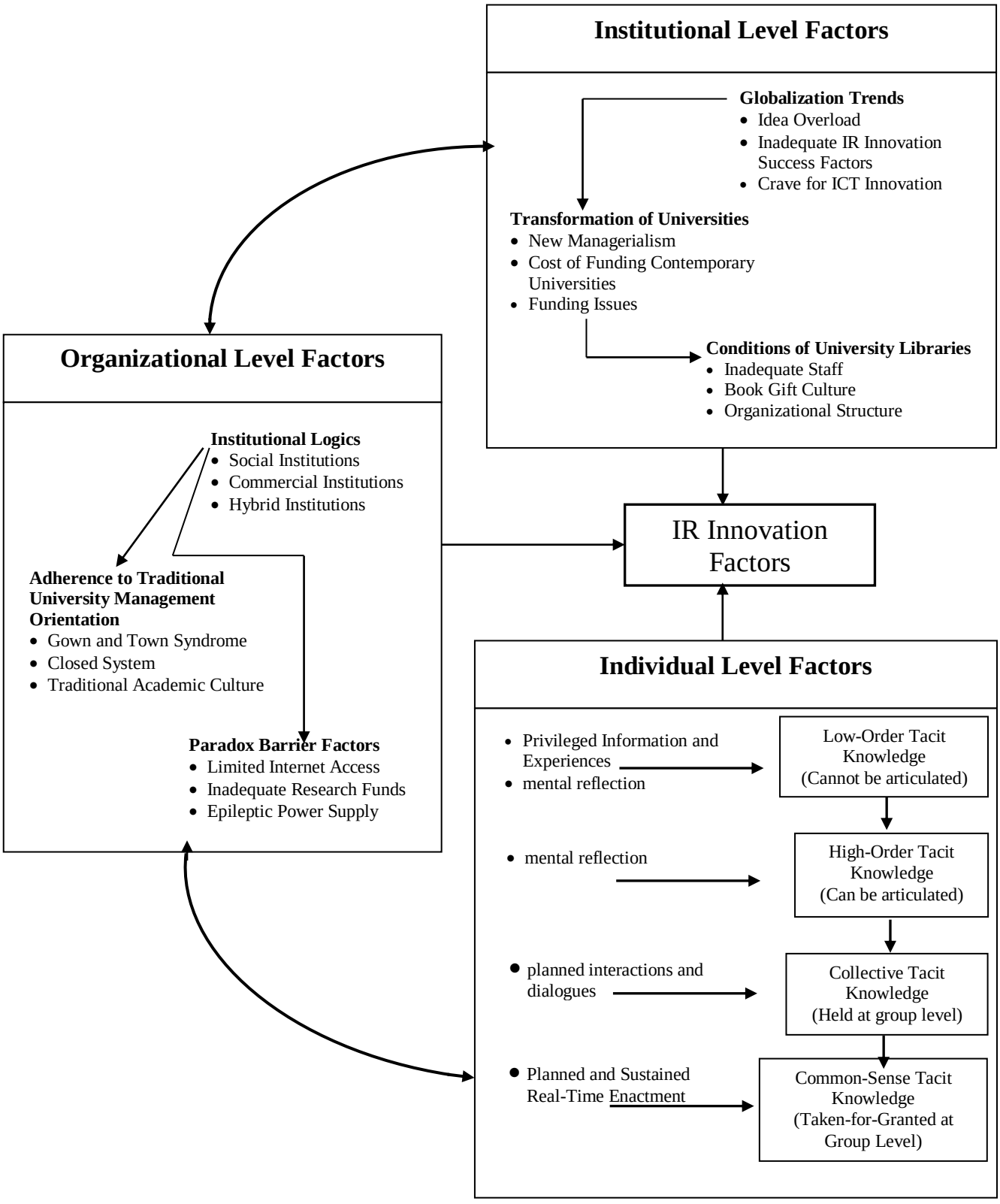


Figure 6.1: Combined Dynamics of IR innovation Factors at Institutional, Organizational and Individual Levels

6.2 Methodological Contribution

Most times, IS scholars make reference to research methodologies that may be adopted in the field (Orlikowski & Baroudi, 1991; Lee, 1989). They make references to the need to understand how this is determined by ontological and epistemological assumptions that drive IS studies (Ngwenyama, 2014; Deetz, 1996; Weick, 1983). In this study, the objective was to develop context relevant theory and to impact practice. The case study research method (Lee, 1989) was adopted to enable the achievement of the research objectives. It was complemented by the power of the inductive research approach to promote the development of new theoretical insights. The combination of case study research method and inductive research approach provides the oppotunitiy to meet the demands of ISDC scholars (1) to create theories that are specific to conditions in developing countries, and (2) to carry out more practically relevant studies in developing countries (Avgerou, 2008; Walsham & Sahay, 2006). Four elements of research methodology namely, case study research method, inductive research approach, interpretive philosophy, unstructured in-depth interview and archives data sources were combined to provide the methodological framework necessary to achieve the development of context specific theory and practical knowledge. The implication of this is that the outcome of the three studies reported in this thesis indicates that the most appropriate research process to adopt to ensure the elicitation of new and context specific theoretical stances is the combination of different methodological techniques. In the past, the power of all these techniques has been explained individually. Hence, a research methodology that combines case study method, inductive reasoning, interpretive philosophy, unstructured in-depth interview and data collection from archives could offer new advantages to researchers seeking to contribute new theoretical stances to IS phenomena. As such, the hybrid methodology adopted in this study constitutes methodological contributions to the ISDC field.

6.3 General Conclusion

The main goal of this study is to do a theoretical and practical contribution to the IS implementation discipline. The study also achieved a third core contribution, a methodological contribution. The question that informed the study was: what conditions

contribute to slow IR innovation in Nigerian universities? IR is a type of IS used to implement open access to scientific knowledge produced by universities. Slow IR innovation in the constext of this study indicates IR innovation that was not completed within the time frame allotted for it. The small number of universities in developing countries that are listed in global list of universities that have innovated IR motivated this study. This was compounded by the dearth of IS studies conducted in universities. In light of the complexity of the socio-technical contexts of developing countries, the study involved assessments at the institutional, organizational and individual levels so that theoretical and practical insights about the influence of the three levels on IS innovation could be exposed. Three studies, each dealing one of the three identified levels of assessment, provided insights on the barriers to IS innovation using examples of IR innovation in three universities in a developing country. Study 1 provides insights on how IS innovation barriers evolve at the institutional level. It identifies globalization trends, transformation of universities and conditions of university libraries as constituting IR innovation barriers. The second study assessed organizational level factors and described the evolution of three IR innovation barrier factors, namely, institutional logics, adherence to traditional university management orientations and paradox barrier factors. The third study showed that, at the individual level, the inability to manage tacit knowledge constitutes IS innovation barrier factor. It identified privileged access to information and experiences, mental reflections, planned interactions and dialogues and planned real-time enactment of IR innovation as the four elements required for effective tacit knowledge management. The three studies together show that factors inherent at institutional, organizational and individual levels combine to constitute IR innovation barrier factors. By implication, it shows that attempt made by IS innovators to uncover and explain factors that come to bear during IS innovation must put into consideration all three levels. It justifies that the nature of contemporary society requires the use of multiple theoretical and methodological stances for the evaluation of IS innovation. The three studies provide answers to these three research questions: *Study 1:* What are the barriers of IR innovation in Nigerian universities and how did the barriers evolve? *Study 2:* How do activities of individuals and organizations outside university context constitute barriers to IR innovation in Nigerian universities? *Study 3:* How should the tacit

knowledge of relevant stakeholders be managed to positively impact IR Innovation in Nigerian universities? The studies first identified IR innovation barrier factors and then provided explanations for their evolution, their interactions and implications on IR innovation. Answers to the research question posed in Study 3 resulted in the proposal of a tacit knowledge management framework which offers an explanation on how to tackle challenges that evolve at individual level. The study meets three fundamental objectives: identification of IR innovation barrier factors, explanation of IR innovation barrier factors and the provision of a resolution framework that can be used to resolve the barrier factors at individual level. Overall, the study made theoretical, methodological and practical contributions to the IS implementation and, more specifically, the ISDC discipline.

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